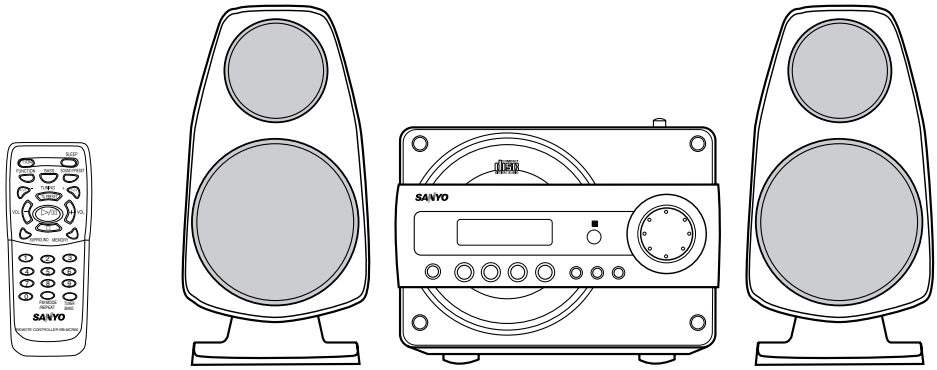
SANYO

FILE NO.

Service Manual — Micro Component System — DC-MCR60 (XE)



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PRODUCT CODE No.
129 684 01

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This service manual consists of "DC-MCR60U/XE" (Main unit : 129 683 01) and "SX-MCR60/XE" (Speaker system : 165 097 03).

REFERENCE No. SM5810499

LASER BEAM SAFETY PRECAUTION

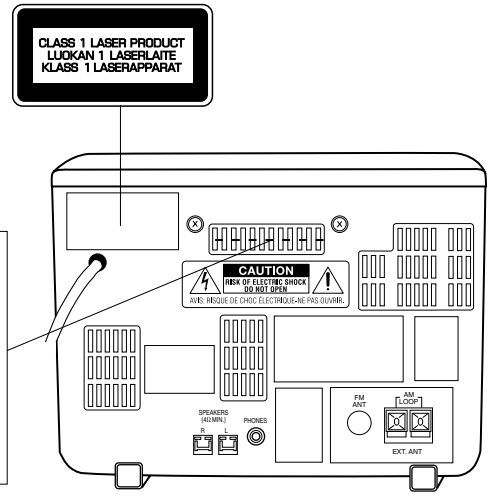
- Pick-up that emits a laser beam is used in this CD player section.

CAUTION :

THIS PRODUCT CONTAINS A LOW POWER LASER DEVICE, TO ENSURE CONTINUED SAFETY DO NOT REMOVE ANY COVERS OR ATTEMPT TO GAIN ACCESS TO THE INSIDE OF THE PRODUCT.
REFER ALL SERVICING TO QUALIFIED PERSONNEL.

LASER OUTPUT ..... 0.6 mW Max. (CW)
WAVELENGTH ..... 790 nm

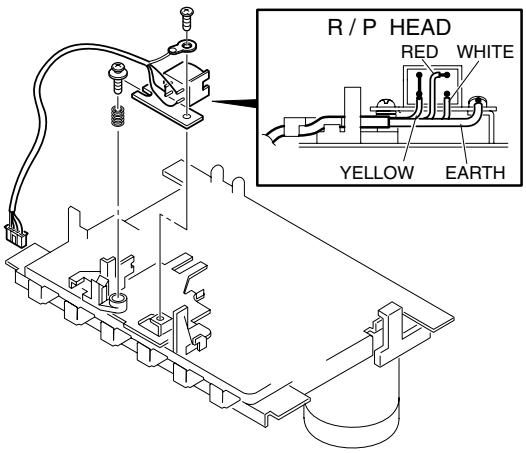
CAUTION – INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED. AVOID EXPOSURE TO BEAM.
ADVARSEL – USYNLIG LASER STRÅLING VED ÅBNING, NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION, UNDGÅ UDS ÆTTELSE FOR STRÅLING.
VARNING – OSYNLIG LASER STRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRR ÄR URKOPPLAD. STRÅLEN ÄR FARLIG.
VORSICHT – UNSICHTBARE LASERSTRAHLUNG TRITT AUS, WENN DECKEL GEÖFFNET UND WENN SICHERHEITSVERRIEGELUNG ÜBERBRÜCKT IST. NICHT, DEM STRAHL AUSSETZEN.
VARO – AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.



TAPE ADJUSTMENTS

a. Replacing the head

1. After replacement, demagnetize the heads by using a degausser.
2. Be sure to clean the heads before attempting to make any adjustments.
3. Be sure both channels (1 and 2) are the same level. (Using a dual-channels oscilloscope).
4. All wiring should be returned to the original position after work is completed.



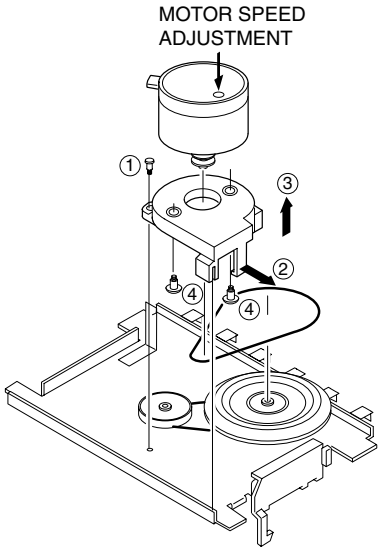
b. Adjusting head azimuth

1. Load a test tape (VTT-738, etc. :10kHz) for azimuth adjustment.
2. Press the PLAY button.
3. Use a cross-tip screwdriver to turn the screw for normal azimuth adjustment so that the left and right outputs are maximized at the same phase during normal playback.
4. Press the STOP button.

c. Adjusting motor speed

1. Insert the test tape (MTT-111 or etc. 3,000 Hz).
2. Press the PLAY button.
3. Use a flat-tip screwdriver to turn the SVR to adjust so that the frequency counter becomes 3,000 Hz.
4. Press the STOP button.

d. Replacing the motor



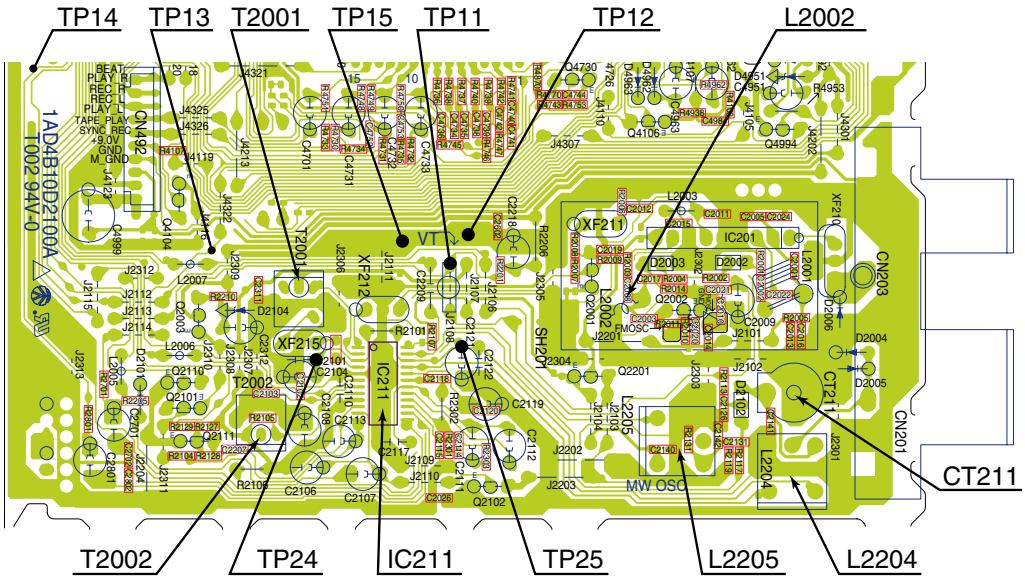
e. Checking the mechanism torques

- Clean the head, capstan and pinch roller before making any measurement.

Measurement	Take-up torque	Back tension	Tape tension
Cassette for measurement	PLAY : TW-2111A F.FWD/REW : TW-2231	PLAY : TW-2111A	Drive-power cassette TW-2412
PLAY	30 ~ 70gr.cm	1.0 ~ 6.0gr.cm	80 gr or more
F.FWD/REW	55 gr or more	-	-

TUNER ADJUSTMENTS

- Use a plastic screw driver for adjustments.
- Speaker impedance : 4 ohms
- MODE : ST (Stereo)
- TUNING FM : 87.5 - 108MHz
  AM : 522 - 1611 kHz (9 kHz steps)
  520 - 1610 kHz (10 kHz steps)



Antenna : 75Ω unbalanced direct, Modulation : 1 kHz
Dev. : ±22.5kHz(MONO), ±22.5kHz(STEREO),±6.75kHz(PILOT)
RF Level : dBuV EMF

1. FM

Output Level : about 30mV at TP13, TP14, TP15

Step	AdjustingCircuit	Connection		SG Frequency	Adjustment	Remark
		Input	Output			
1	IF(0V) Adjustment	FM ANT SG=66dBuV	TP24,25	98.0MHz	T2002	(IC211 3-22pin) 0.0±0.05V
2	Cover	---	TP11 (H)	87.5MHz	---	1.50±0.5V Check Only
			TP12 (E)	108.0MHz	L2002	8.0±0.05V
3	Tracking	FM Ant	TP13 (L) TP14 (R) TP15 (E)	90.0MHz 106.0MHz	---	Maximum

Anntena : IRE Loop(SG), Moduration : 1kHz 30%
RF Level : dBuV EMF

2. AM

Output Level : about 30mV at TP13, TP14, TP15

Step	AdjustingCircuit	Connection		SG Frequency	Adjustment	Remark
		Input	Output			
1	IF Adjustment	Loop Ant	TP13 (L) TP14 (R) TP15 (E)	450KHz at 999kHz	T2001	Maximum
2	Cover (MW)	---	TP11 (H)	522kHz	L2205	1.00±0.05V
			TP12 (E)	1611kHz	---	7.50±0.50V Check Only
3	Tracking (MW)	Loop Ant	TP13 (L) TP14 (R) TP15 (E)	603kHz 1404kHz	L2204 CT211	Maximum

CD PICK-UP MAINTENANCE

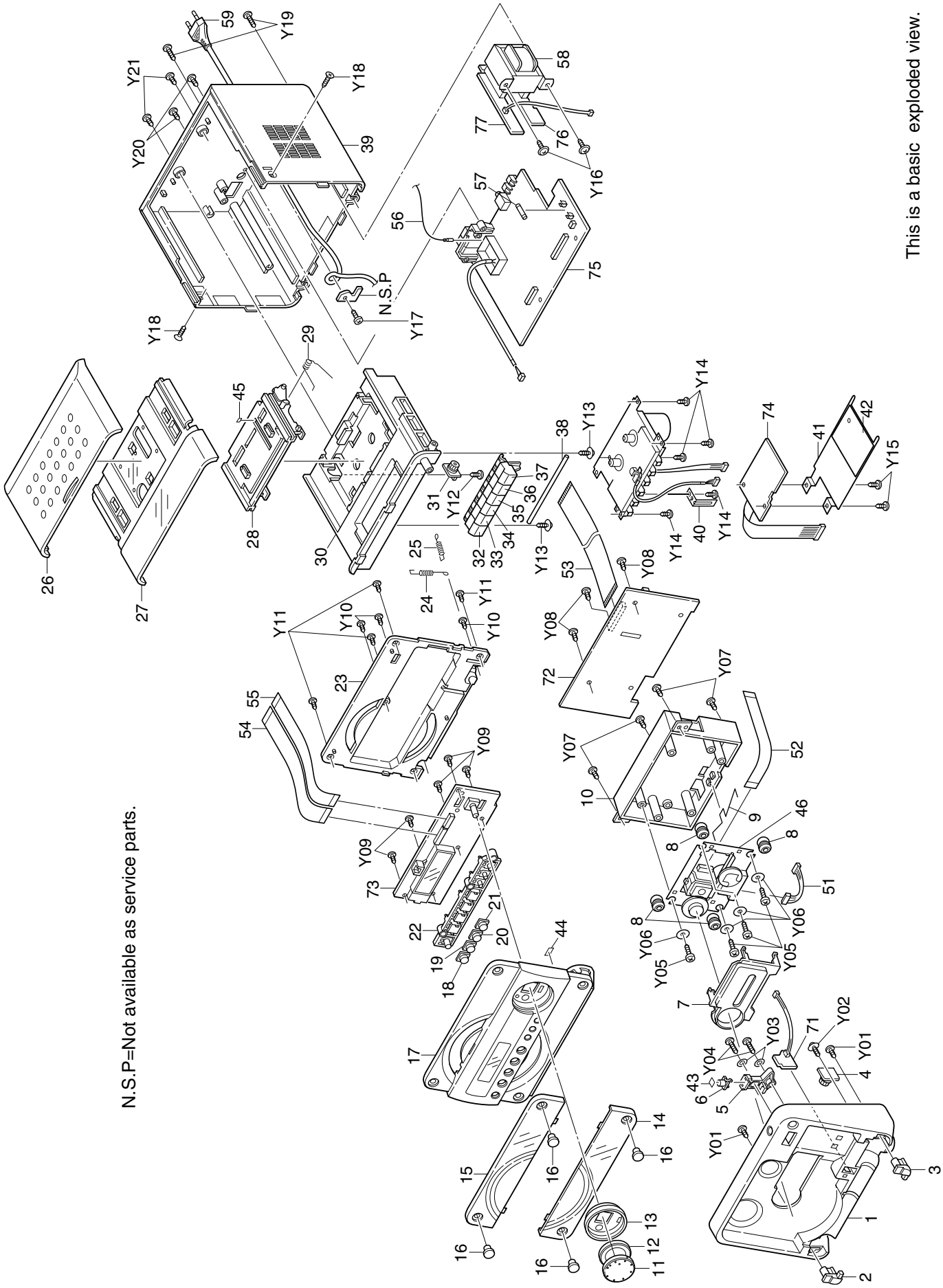
About pick-up (Optical lens) Cleaning

Clean a lens with swab of the cotton which moistened it with alcohol, cleaning paper or cleaning disc appointed.
Specified cleaning disc : LC-1 (Part code : 645 026 1961 ..... manufactured by SANYO.)

Show a clean procedure in the following in reference by swab of cotton.

1. Cotton swab is wrapped with Cleaning paper.
2. Add the isopropyl alcohol.
3. Gently move the tip of cotton swab just like a draw a whirlpool from inside to outside on the surface of lens.

EXPLODED VIEW



PARTS LIST

PRODUCT SAFETY NOTICE

EACH PRECAUTION IN THIS MANUAL SHOULD BE FOLLOWED DURING SERVICING. COMPONENTS IDENTIFIED WITH THE IEC SYMBOL ⚠ IN THE PARTS LIST AND THE SCHEMATIC DIAGRAM DESIGNATED COMPONENTS IN WHICH SAFETY AND PERFORMANCE CAN BE OF SPECIAL SIGNIFICANCE. WHEN REPLACING A COMPONENT IDENTIFIED BY ⚠, USE ONLY THE REPLACEMENT PARTS DESIGNATED, OR PARTS WITH THE SAME RATINGS OF RESISTANCE, WATTAGE OR VOLTAGE THAT ARE DESIGNATED IN THE PARTS LIST IN THIS MANUAL. LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS MUST BE MADE TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE PRODUCT TO THE CUSTOMER.

CAUTION : Regular type resistors and capacitors are not listed. To know those values, refer to the schematic diagram.
Regular type resistors are less than 1/4 W carbon type and 0 ohm chip resistors.
Regular type capacitors are less than 50 V and less than 1000 μF type of Ceramic type and Electrical type.

N.S.P : Not available as service parts.

PACKING & ACCESSORIES

REF.NO.	PART NO.	DESCRIPTION
	614 328 9937	CARTON CASE
	614 327 8085	CUSHION,RIGHT
	614 327 8092	CUSHION,LEFT
	645 035 1563	POLY SHEET-0870X0480*NC,SET
	614 328 9975	INSTRUCTION MANUAL
	614 329 0001	INSTRUCTION SHEET
	645 046 8322	ASSY,ANTENA,LOOP
	614 328 4635	LID,BATTERY REMOCON,SERVICE
	645 063 8725	REMOCON,RB-MCR60
	614 328 9319	ASSY,BOX,SPEAKER

CABINET & CHASSIS

REF.NO.	PART NO.	DESCRIPTION
1	614 327 8672	ASSY,PANEL FRONT
2	614 327 8009	SHAFT,RIGHT
3	614 327 7996	SHAFT,LEFT
4	614 322 2125	ASSY,GEAR,LID,CD
5	614 327 7941	LEVER
6	614 327 7682	BUTTON,CD OPEN
7	614 307 2072	COVER,PICK-UP
8	614 298 8886	SPACER,MECHA,MTG CD+DA11
9	614 327 8016	SPRING,CD
10	614 327 7958	MOUNTING,CD
11	614 327 7859	KNOB,VOLUME
12	614 327 7804	DEC,CAP VOLUME
13	614 327 7798	DEC,RING
14	614 327 7750	DEC,WINDOW,CD BTM
15	614 327 7743	DEC,WINDOW,CD TOP
16	614 327 8382	CAP,WINDOW
17	614 327 7675	ASSY,PANEL
18	614 328 9500	DEC,BUTTON
19	614 328 9517	DEC,BUTTON
20	614 328 9524	DEC,BUTTON
21	614 328 9531	DEC,BUTTON
22	614 327 7699	BUTTON,OPERATION,8 KEYS
23	614 328 4604	ASSY,COVER LID
24	614 327 8030	SPRING,DOOR CD
25	614 329 2432	SPRING,DOOR CD
26	614 327 7934	LID,CASSETTE
27	614 327 7781	DEC,WINDOW,DECK
28	614 327 7712	COVER,DECK
29	614 327 8054	SPRING,DOOR DECK
30	614 327 7972	PANEL,TOP
31	614 322 2132	ASSY,GEAR,LID,CASSETTE
32	614 327 7866	KNOB,DECK,MECHA,REC
33	614 327 7873	KNOB,DECK,MECHA,PLAY
34	614 327 7880	KNOB,DECK,MECHA,REW
35	614 327 7897	KNOB,DECK,MECHA,FFWD
36	614 327 7903	KNOB,DECK,MECHA,STOP/EJECT
37	614 327 7910	KNOB,DECK,MECHA,PAUSE
38	614 270 8477	SHAFT
39	614 328 9340	ASSY,CABINET,REAR
40	614 327 8023	SPRING,REC
41	614 328 9821	SHIELD,DECK PWB
42	614 329 2425	SHIELD,DECK PWB
43	614 329 2845	SPACER,CUSHION, F-PANEL+BUTTON,CD OPEN
44	614 329 3408	SPACER,CUSHION
45	614 327 5534	STAND,CUSHION
46	614 327 7668	ASSY,MECHA,DA11B3N

FIXING PARTS

REF.NO.	PART NO.	DESCRIPTION
Y01	411 021 3503	SCR S-TPG BIN 3X10, SHAFT+LID,CD
Y02	411 021 3503	SCR S-TPG BIN 3X10, F-PANEL+ASSY,GEAR CD
Y03	411 092 0906	WASHER Z 2.6X10X0.5, F-PANEL+LEVER
Y04	411 156 2105	SCR S-TPG BIN 2.3X6, F-PANEL+LEVER
Y05	411 165 3803	SCR S-TPG BIN 2.3X10, MTG CD+CD11
Y06	411 092 0906	WASHER Z 2.6X10X0.5, MTG CD+CD11
Y07	411 021 3503	SCR S-TPG BIN 3X10, MTC CD+F-PANEL
Y08	411 021 3503	SCR S-TPG BIN 3X10, MTG-CD+CD,PWB
Y09	411 098 4700	SCR S-TPG BIN 2.3X8, FRONT,PWB+LID,CD
Y10	411 187 2808	SCR S-TPG BIN 2.3X8, LID,CD+COVER,LID
Y11	411 187 2709	SCR S-TPG BIN 2.3X6, CAP,WINDOW+COVER,LID
Y12	411 020 8905	SCR S-TPG BRZ+FLG 3X10, PANEL,TOP+ASSY,CEAR DECK
Y13	412 032 6408	SPECIAL SCREW, SHAFT+PANEL,TOP
Y14	411 021 6405	SCR S-TPG BIN 3X8, DECK,MECHA+PANEL,TOP
Y15	411 021 3503	SCR S-TPG BIN 3X10, DECK,PWB+PANEL,TOP
Y16	411 020 9100	SCR S-TPG BRZ+FLG 3X12, P TRANS+REAR
Y17	411 021 3503	SCR S-TPG BIN 3X10,AC CORD
Y18	411 098 7800	SCR S-TPG FLT 3X12, PANEL,FRONT+REAR(L,R)
Y19	411 021 4906	SCR S-TPG BIN 3X20, PANEL,FRONT+REAR
Y20	411 021 3503	SCR S-TPG BIN 3X10, REAR+ANT TERMINAL
Y21	411 021 3503	SCR S-TPG BIN 3X10, PANEL,TOP+REAR

PARTS LIST

ELECTRICAL PARTS

REF.NO.	PART NO.	DESCRIPTION
51	614 328 4307	ASSY,WIRE,CD TO MOTOR
52	614 328 4376	FLEXIBLE FLAT CABLE,CD PICK UP
53	614 328 4369	FLEXIBLE FLAT CABLE, SYSCON TO AMP
54	614 328 4390	FLEXIBLE FLAT CABLE, SYSCON TO FRONT
55	614 328 4383	FLEXIBLE FLAT CABLE, SYSCON TO FRONT
56	614 274 2013	CORD,ID CONNECTOR
57	⚠ 423 016 7908	FUSE 250V 2.5A
58	⚠ 645 064 8144	TRANS,POWER
59	⚠ 645 016 9939	CORD,POWER-1.74MK, GB-FB-160-N2B-012-0

SWITCH P.W.BOARD ASSY

REF.NO.	PART NO.	DESCRIPTION
71	614 327 7330	ASSY,PWB,SW(Only initial)
CN698	614 020 6548	SOCKET,2P
S6951	645 023 5795	SWITCH,LEVER

CD & SYSCON P.W.BOARD ASSY

REF.NO.	PART NO.	DESCRIPTION
72	614 328 8510	ASSY,PWB,CD-SYSCON(Only initial)
C6200	403 259 0508	NP-ELECT 1U M 50V
or	403 373 7001	NP-ELECT 1U M 50V
CN111	645 059 0498	SOCKET,FPC 16P
CN113	645 005 8127	PLUG,6P
or	614 310 2472	PLUG,6P
CN690	645 004 2881	PLUG,2P,MCON-LID_SW
or	614 310 2731	PLUG,2P,MCON-LID_SW
CN691	645 063 8695	SOCKET,FPC 22P,MCON-FRONT
CN692	645 012 5324	SOCKET,FPC 28P,MCON-AMP
or	645 009 8482	SOCKET,FFC 28P,MCON-AMP
CN693	645 059 0498	SOCKET,FPC 16P,MCON-FRONT
CN694	614 310 2731	PLUG,2P,MCON-TU
or	645 004 2881	PLUG,2P,MCON-TU
D1401	407 012 4406	DIODE 1SS133
D1402	407 012 4406	DIODE 1SS133
D1403	407 012 4406	DIODE 1SS133
D1404	407 099 5204	ZENER DIODE MTZJ5.1B
D1410	⚠ 407 098 3300	DIODE RL153-BF-S2
D6901	407 012 4406	DIODE 1SS133
D6902	407 012 4406	DIODE 1SS133
IC101	409 503 5701	IC LA9242M-MPB
IC102	409 539 9704	IC LC78629E
IC103	⚠ 409 486 8706	IC MM1469XH
IC601	409 578 1103	IC LC72338-9C10,MICON
JW600	614 329 2128	ASSY,WIRE
L1451	645 001 4550	INDUCTOR,10U K
L6900	645 001 4550	INDUCTOR,10U K
L6901	645 002 1459	INDUCTOR,22U K
PR140	⚠ 645 014 2499	PROTECTOR,0.4A 125V
Q1301	405 008 6809	TR 2SB808-F-SPA
or	405 008 7202	TR 2SB810-E
or	405 008 7301	TR 2SB810-F
Q1401	⚠ 405 141 3604	TR KTA1273-Y
or	⚠ 405 009 5207	TR 2SB927-S
or	⚠ 405 009 5306	TR 2SB927-T
Q6200	405 011 8609	TR 2SC1740S-S
or	405 017 9600	TR 2SC3330-T
or	405 017 9709	TR 2SC3330-U
or	405 011 8500	TR 2SC1740S-R
or	405 143 8706	TR KTC3199-GR
Q6201	405 143 8706	TR KTC3199-GR
or	405 011 8500	TR 2SC1740S-R
or	405 011 8609	TR 2SC1740S-S
or	405 017 9600	TR 2SC3330-T
or	405 017 9709	TR 2SC3330-U
X1451	614 231 2667	RESONATOR
or	645 057 1145	OSC,CERAMIC 16.93MHZ
X6001	645 052 6206	OSC,CRYSTAL 4.5MHZ

FRONT P.W.BOARD ASSY

REF.NO.	PART NO.	DESCRIPTION
73	614 328 8411	ASSY,PWB,FRONT(Only initial)
BR601	614 327 7828	DEC,SHEET LCD
BR602	614 327 7842	HOLDER,LCD
BR603	614 327 7736	COVER,LED
BR604	614 327 7989	REFLECTOR,LCD
CN601	645 063 8695	SOCKET,FPC 22P,FRONT-MCON
CN603	645 063 8701	SOCKET,FPC 16P,FRONT-MCON
D6201	407 235 7406	LED LT7V34-81-URC1
D6313	407 235 7406	LED LT7V34-81-URC1
D6314	407 235 7406	LED LT7V34-81-URC1
D6315	407 235 7406	LED LT7V34-81-URC1
D6330	407 012 4406	DIODE 1SS133
D6401	407 012 4406	DIODE 1SS133
D6402	407 099 5303	ZENER DIODE MTZJ5.6B
LCD60	645 064 7826	LCD
Q6300	405 011 8609	TR 2SC1740S-S
or	405 015 6205	TR 2SC2785-E
or	405 015 6403	TR 2SC2785-F
or	405 011 8500	TR 2SC1740S-R
S6101	614 240 1002	SWITCH,TACT
or	645 006 5958	SWITCH,PUSH 1P-1T
or	645 048 3820	SWITCH,PUSH
or	614 220 5471	SWITCH,TACT
S6102	614 220 5471	SWITCH,TACT
or	614 240 1002	SWITCH,TACT
or	645 006 5958	SWITCH,PUSH 1P-1T
or	645 048 3820	SWITCH,PUSH
S6103	614 220 5471	SWITCH,TACT
or	614 240 1002	SWITCH,TACT
or	645 006 5958	SWITCH,PUSH 1P-1T
or	645 048 3820	SWITCH,PUSH
S6104	614 220 5471	SWITCH,TACT
or	614 240 1002	SWITCH,TACT
or	645 006 5958	SWITCH,PUSH 1P-1T
or	645 048 3820	SWITCH,PUSH
S6105	614 240 1002	SWITCH,TACT
or	645 006 5958	SWITCH,PUSH 1P-1T
or	645 048 3820	SWITCH,PUSH
or	614 220 5471	SWITCH,TACT
S6106	614 220 5471	SWITCH,TACT
or	614 240 1002	SWITCH,TACT
or	645 006 5958	SWITCH,PUSH 1P-1T
or	645 048 3820	SWITCH,PUSH
S6107	614 220 5471	SWITCH,TACT
or	614 240 1002	SWITCH,TACT
or	645 006 5958	SWITCH,PUSH 1P-1T
or	645 048 3820	SWITCH,PUSH
S6108	614 220 5471	SWITCH,TACT
or	614 240 1002	SWITCH,TACT
or	645 006 5958	SWITCH,PUSH 1P-1T
or	645 048 3820	SWITCH,PUSH
S6500	645 031 8078	SWITCH,ROTARY(ENCODER)
SE601	407 232 4002	PHOTO DIODE SPS-440-1-VG

PARTS LIST

DECK P.W.BOARD ASSY

REF.NO.	PART NO.	DESCRIPTION
74	614 327 7316	ASSY,PWB,DECK(Only initial)
C5918	403 056 7502	POLYESTER 1000P J 50V
or	403 377 6307	POLYESTER 1000P J 50V
CN500	645 012 2750	SOCKET,DIP 10P
CN505	614 310 2755	PLUG,4P
or	645 004 2904	PLUG,4P
CN506	614 310 2458	PLUG,4P
or	645 005 8110	PLUG,4P
IC510	409 384 3506	IC BA3314F
L5902	645 031 5893	TRANS,OSC,85KHZ,O.S.C
Q5902	405 143 8706	TR KTC3199-GR
or	405 011 8500	TR 2SC1740S-R
or	405 011 8609	TR 2SC1740S-S
or	405 017 9600	TR 2SC3330-T
or	405 017 9709	TR 2SC3330-U
Q5904	405 017 9600	TR 2SC3330-T
or	405 017 9709	TR 2SC3330-U
or	405 011 8609	TR 2SC1740S-S
or	405 011 8500	TR 2SC1740S-R
or	405 143 8706	TR KTC3199-GR
S5950	645 038 7586	SWITCH,PUSH,R/PSW

AMPLIFIER & TUNER P.W.BOARD ASSY

REF.NO.	PART NO.	DESCRIPTION
75	614 328 8404	ASSY,PWB,AMP-TU(Only initial)
C4714	403 058 4608	POLYESTER 0.15U J 50V
or	403 377 6406	POLYESTER 0.15U J 50V
C4814	403 058 4608	POLYESTER 0.15U J 50V
or	403 377 6406	POLYESTER 0.15U J 50V
C4913	403 329 5907	ELECT 3300U M 25V
or	403 350 9301	ELECT 3300U M 25V
CN201	645 025 4703	TERMINAL,ANTENNA
or	645 038 7715	TERMINAL
CN203	614 221 8273	TERMINAL
CN401	645 006 1875	PLUG,2P,SPEAKER
CN402	645 006 1875	PLUG,2P,SPEAKER
CN421	645 011 6384	JACK,PHONE D3.6,HEADPHONE
or	645 055 1017	JACK,PHONE D3.6,HEADPHONE
CN441	614 310 2731	PLUG,2P,POWER
or	645 004 2881	PLUG,2P,POWER
CN461	614 221 8273	TERMINAL
CN491	645 012 5324	SOCKET,FPC 28P,AMP-MCON
CN492	614 310 2519	PLUG,10P,AMP-DECK
or	645 005 8158	PLUG,10P,AMP-DECK
CT211	645 032 5663	TRIMMER,7PF
D2002	407 157 8109	VARACTOR DI SVC211-B
D2003	407 157 8109	VARACTOR DI SVC211-B
D2004	407 012 4406	DIODE 1SS133
D2005	407 012 4406	DIODE 1SS133
D2006	407 012 4406	DIODE 1SS133
D2101	407 012 4406	DIODE 1SS133
D2102	407 105 1602	VARACTOR DI SVC342M-V
or	407 105 1305	VARACTOR DI SVC342L-V
D2104	407 099 5303	ZENER DIODE MTZJ5.6B
D4102	407 012 4406	DIODE 1SS133
D4951	⚠407 099 6003	ZENER DIODE MTZJ9.1B
D4953	407 012 4406	DIODE 1SS133
D4961	407 012 4406	DIODE 1SS133
D4962	407 012 4406	DIODE 1SS133
D4963	407 012 4406	DIODE 1SS133
D4980	⚠407 098 3300	DIODE RL153-BF-S2
D4981	⚠407 098 3300	DIODE RL153-BF-S2
D4982	⚠407 098 3300	DIODE RL153-BF-S2
D4983	⚠407 098 3300	DIODE RL153-BF-S2
D4993	407 012 4406	DIODE 1SS133
FCL41	⚠645 006 4760	HOLDER,FUSE
or	⚠645 031 7903	HOLDER,FUSE
FCL42	⚠645 006 4760	HOLDER,FUSE
or	⚠645 031 7903	HOLDER,FUSE
HS401	614 327 7835	HEAT SINK
IC201	409 016 0200	IC LA1186N-AUDIO
IC211	409 474 3201	IC LA1844ML
IC411	409 390 1107	IC LC75392
IC412	⚠409 295 7402	IC TA8229K
IC446	⚠409 039 9204	IC NJM78L05A
L2001	645 040 2753	INDUCTOR,AIR —
L2002	645 040 2746	COIL,AIR —
L2003	645 002 1534	INDUCTOR,8.2U K
L2005	645 002 1459	INDUCTOR,22U K
L2006	645 002 1459	INDUCTOR,22U K
L2007	645 002 1459	INDUCTOR,22U K
L2204	645 058 8792	TRANS,ANT,796KHZ
or	645 037 2377	TRANS,ANT,796KHZ
L2205	645 065 3568	TRANS,OSC,796KHZ
L4780	645 002 1459	INDUCTOR,22U K
L4781	645 002 1459	INDUCTOR,22U K
L4881	645 002 1459	INDUCTOR,22U K
PR495	⚠645 014 2529	PROTECTOR,1.25A 125V
PR496	⚠645 014 2536	PROTECTOR,1.5A 125V
Q2001	405 151 4301	TR KTC3195-Y
or	405 151 4806	TR KTC3195-O
Q2002	405 151 4301	TR KTC3195-Y
or	405 151 4806	TR KTC3195-O
Q2003	405 017 9709	TR 2SC3330-U
or	405 017 9600	TR 2SC3330-T
or	405 011 8609	TR 2SC1740S-S
or	405 011 8500	TR 2SC1740S-R
or	405 143 8706	TR KTC3199-GR
Q2101	405 000 0904	TR DTA114YS
or	405 151 5209	TR KRA107M
Q2102	405 143 0007	TR KRC107M
or	405 000 3806	TR DTC114YS
Q2110	405 143 0007	TR KRC107M
or	405 000 3806	TR DTC114YS
Q2111	405 151 4301	TR KTC3195-Y
or	405 151 4806	TR KTC3195-O
Q2201	405 151 5209	TR KRA107M
or	405 000 0904	TR DTA114YS
Q4103	405 000 0508	TR DTA114ES
or	405 110 5400	TR KRA102M-A
Q4104	405 000 3103	TR DTC114ES
or	405 109 9204	TR KRC102M-A
Q4106	405 000 3103	TR DTC114ES
or	405 109 9204	TR KRC102M-A
Q4108	405 000 3806	TR DTC114YS
or	405 143 0007	TR KRC107M
Q4109	405 000 3806	TR DTC114YS
or	405 143 0007	TR KRC107M
Q4730	405 143 6504	TR KTA1267-GR
or	405 004 4601	TR 2SA608-F-SPA
or	405 006 1806	TR 2SA933S-R
or	405 006 1905	TR 2SA933S-S
or	405 004 5103	TR 2SA608-G-SPA
Q4740	405 000 3103	TR DTC114ES
or	405 109 9204	TR KRC102M-A
Q4751	405 151 4400	TR KTD1303
or	405 021 0204	TR 2SD1012-F-SPA
or	405 021 0600	TR 2SD1012-G-SPA
or	405 033 6706	TR 2SD1468S-R
or	405 033 6805	TR 2SD1468S-S
Q4830	405 143 6504	TR KTA1267-GR
or	405 004 4601	TR 2SA608-F-SPA
or	405 004 5103	TR 2SA608-G-SPA
or	405 006 1806	TR 2SA933S-R
or	405 006 1905	TR 2SA933S-S
Q4840	405 109 9204	TR KRC102M-A
or	405 000 3103	TR DTC114ES
Q4851	405 151 4400	TR KTD1303
or	405 021 0204	TR 2SD1012-F-SPA
or	405 021 0600	TR 2SD1012-G-SPA
or	405 033 6706	TR 2SD1468S-R
or	405 033 6805	TR 2SD1468S-S

PARTS LIST

REF.NO.	PART NO.	DESCRIPTION
Q4903	405 143 8706	TR KTC3199-GR
or	405 011 8500	TR 2SC1740S-R
or	405 011 8609	TR 2SC1740S-S
or	405 017 9600	TR 2SC3330-T
or	405 017 9709	TR 2SC3330-U
Q4951	⚠ 405 138 6403	TR KTD2058Y
or	⚠ 405 095 1602	TR 2SD2061-E
or	⚠ 405 095 1701	TR 2SD2061-F
Q4992	405 008 2504	TR 2SB698-G
or	405 008 2405	TR 2SB698-F
or	405 141 3703	TR KTA1271-Y
Q4994	405 000 3806	TR DTC114YS
or	405 143 0007	TR KRC107M
Q4995	405 141 3703	TR KTA1271-Y
or	405 008 2405	TR 2SB698-F
or	405 008 2504	TR 2SB698-G
R4752	⚠ 402 071 1304	FUSIBLE RES 2.2 JA 1/4W
R4852	⚠ 402 071 1304	FUSIBLE RES 2.2 JA 1/4W
R4941	⚠ 402 096 0306	FUSIBLE RES 27 JA 1/4W
SA401	411 021 6405	SCR S-TPG BIN 3X8
SA402	411 021 6405	SCR S-TPG BIN 3X8
SH201	614 256 3052	SHIELD
T2001	645 043 0213	FILTER,450KHZ
T2002	645 040 9981	TRANS,IF 10.7MHZ
or	645 039 9923	TRANS,IF 10.7MHZ
XF210	645 059 0047	FILTER,BP
or	645 026 2975	FILTER,BP 108MHZ
or	614 252 1045	FILTER,LC
XF211	645 054 1223	CERAMIC FILTER 10.70MHZ
or	645 010 7665	CERAMIC FILTER 10.70MHZ
or	614 240 2917	FILTER,CERAM
XF212	645 054 1223	CERAMIC FILTER 10.70MHZ
or	645 010 7665	CERAMIC FILTER 10.70MHZ
or	614 240 2917	FILTER,CERAM
XF215	645 041 9324	CERAMIC FILTER 450KHZ
or	645 059 0054	CERAMIC FILTER 450KHZ

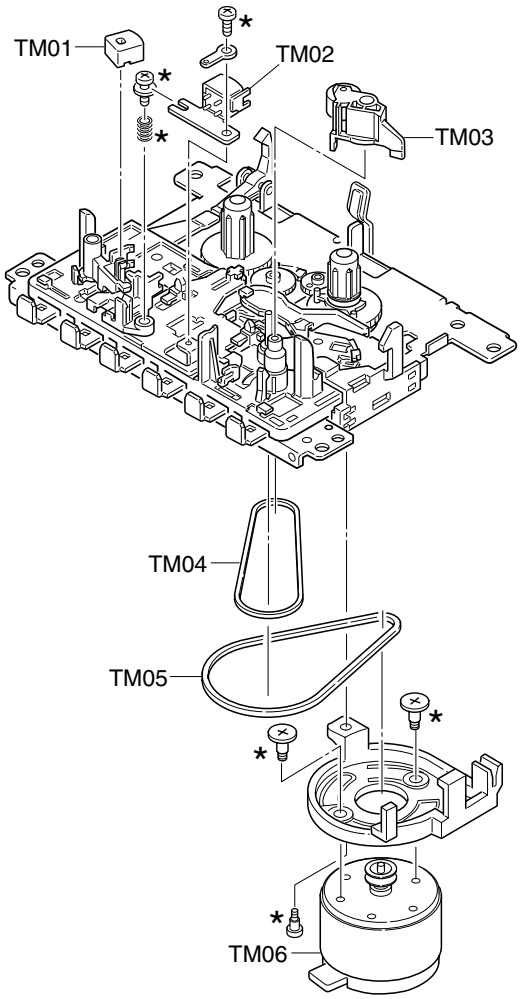
PRIMARY POWER SUPPLY P.W.BOARD ASSY

REF.NO.	PART NO.	DESCRIPTION
76	614 327 7323	ASSY,PWB,PT(Only initial)
CN450	614 020 1215	SOCKET,2P
CN453	614 328 4338	ASSY,WIRE

SECONDARY POWER SUPPLY P.W.BOARD ASSY

REF.NO.	PART NO.	DESCRIPTION
77	614 328 4482	ASSY,PWB,PT2(Only initial)
CN451	614 017 8203	TERMINAL BOARD
CN452	614 017 8203	TERMINAL BOARD
L4591	⚠ 645 038 6053	INDUCTOR,181U
or	⚠ 645 041 3087	INDUCTOR,180U

EXPLODED VIEW & PARTS LIST (TAPE MECHANISM)



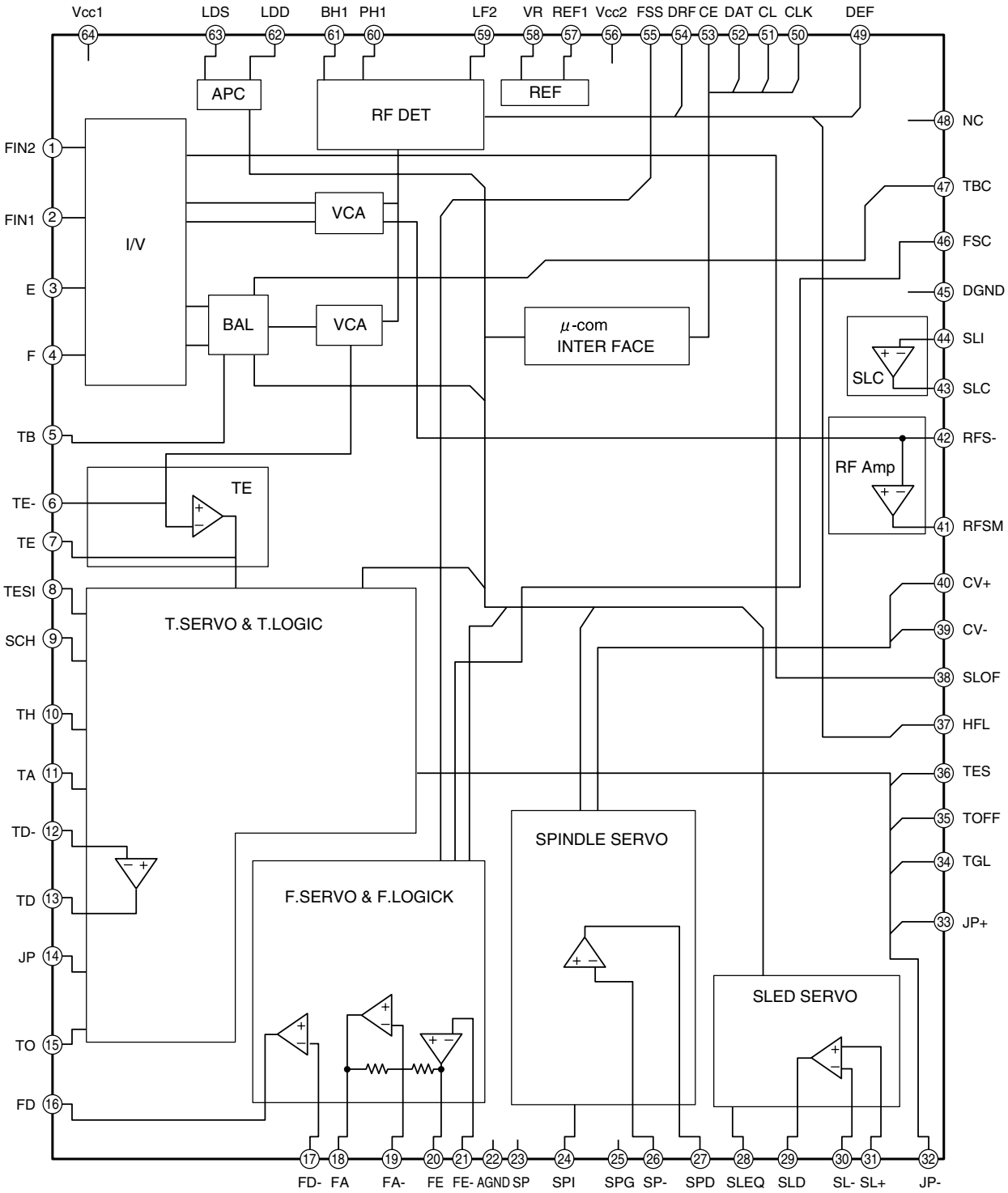
TAPE MECHANISM

REF.NO.	PART NO.	DESCRIPTION
	614 328 4239	ASSY,MECHA,TM DS60TN-SH
TM01	645 033 8625	E HEAD 6PA
TM02	645 041 3025	R.P HEAD
TM03	645 009 1612	PINCH ROLLER ARM ASSY
TM04	645 009 1766	RF BELT
TM05	645 033 3415	MAIN BELT
TM06	614 312 0629	ASSY,MOTOR

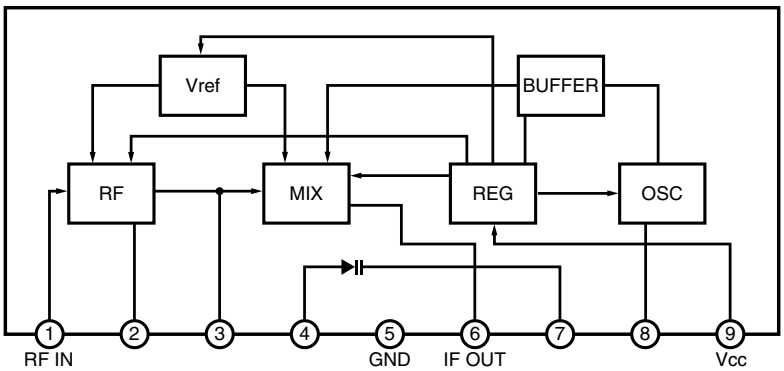
***** : Not available as service parts.

IC BLOCK DIAGRAM & DESCRIPTION

IC101 LA9242M-MPB (Servo Processing Signal for CD Player)

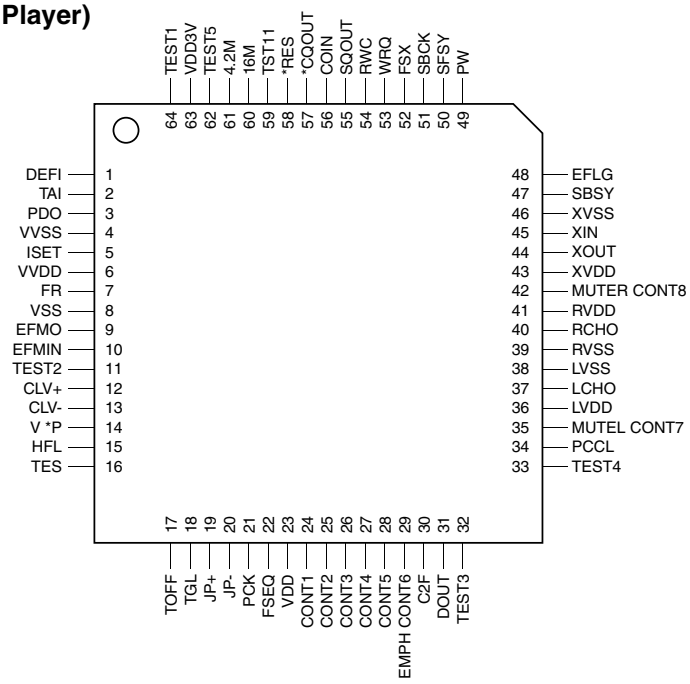


IC201 LA1186N-AUDIO (Diode for RM AMP, MIX, OSC & AFC)



IC BLOCK DIAGRAM & DESCRIPTION

IC102 LC78629E (DSP for CD Player)



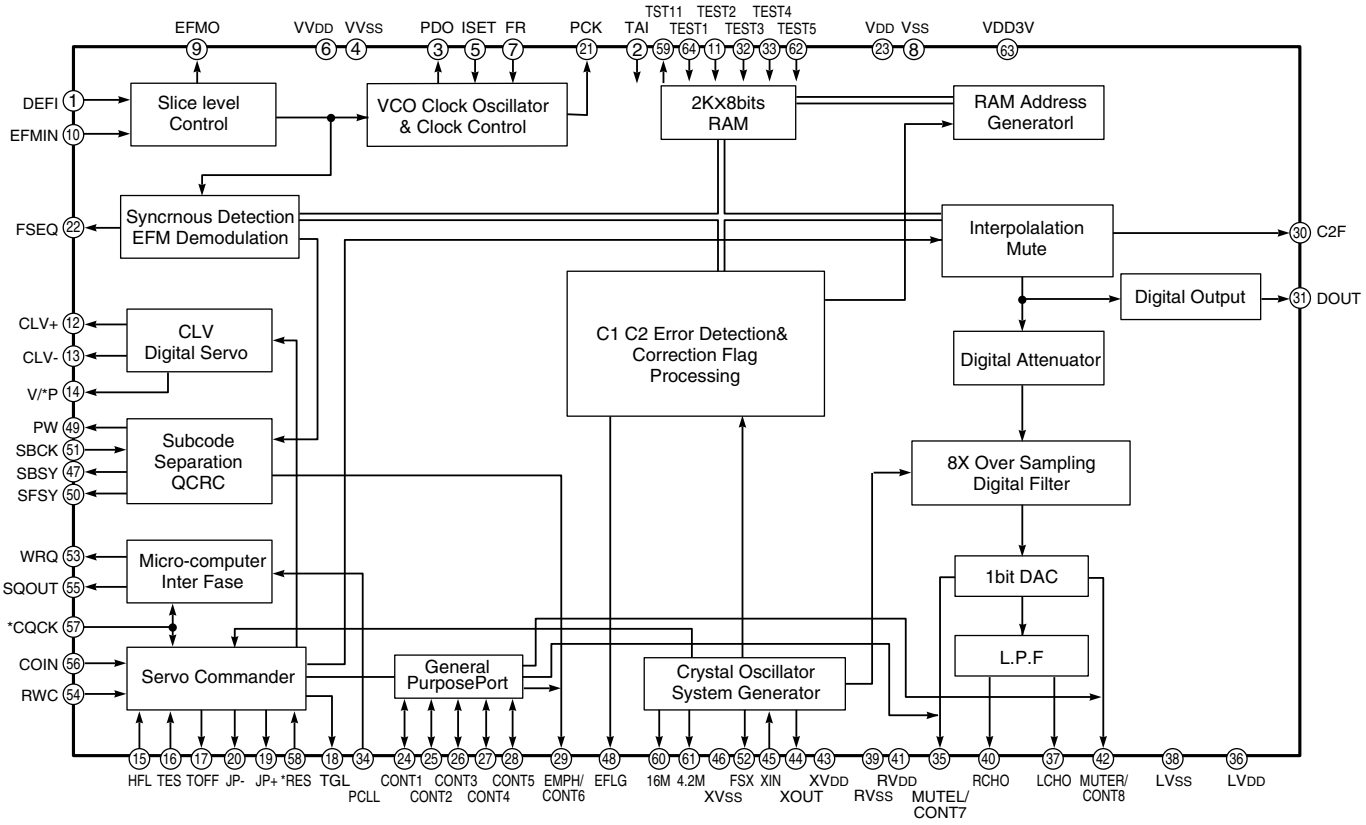
No.	Symbol	I/O	Function description		Output pin to rest
1	DEFI	I	Defect detection signal(DEF) input pin. (Must be connected to 0V when unused.)		-
2	TAI	I	PLL	Test input pin. A pull-down resistor is built-in. Must be connected to 0V.	-
3	PDO	O		External VCO control phase comparator output pin.	
4	VVSS	-		Internal VCO ground pin.Must be connected to 0V.	
5	ISET	AI		PDO output current adjustment resistor connection pin.	
6	VVDD	-		Internal VCO power supply pin.	
7	FR	AI		VCO frequency range adjustment.	
8	VSS	-	Digital system ground pin. Must be connected to 0V.		-
9	EFMO	O	Slice level control	EFM signal output pin.	Incertitude
10	EFMIN	I		EFM signal input pin.	-
11	TEST2	I	Test input pin. A pull down resistor is built in. Must be connected to 0V.		-
12	CLV+	O	Disk motor control output. Can be set to three-value output by microprpcessor command.		L output
13	CLV-	O			
14	V/*P	O	Rough servo/phase control automatic switching monitor output pin. Outputs a high level during rough servo and a low level.		L output
15	HFL	I	Track detection signal input pin. This is a Schmidt input.		-
16	TES	I	Tracking error signal input pin. This is a Schmidt input.		-
17	TOFF	O	Tracking off output pin.		H output
18	TGL	O	Tracking gain switching output pin. Increase the gain when low.		Incertitude
19	JP+	O	Track jump output. Three-value output is also possible when specified by microprocessor command.		L output
20	JP-	O			
21	PCK	O	EMF data playback clock monitor pin. Output 4.3218MHz when the normal-speed playback phase command.		L output
22	FSEQ	O	Synchhronization signal detection output pin. Output a high level when the synchronization signal detected from the EFM signal and the internaly generated synchronization signal range.		Incertitude
23	VDD	-	Peripheral circuitry 5V system power suply pin.		-
24	CONT1	I/O	General-purpose 1 input/output pin.	Controlled by serial data commands. From the microprocessor. Any of these that are unused must be either set up as input pin and connected to 0V, or set up as output pin and left open.	Input
25	CONT2	I/O	General-purpose 2 input/output pin.		
26	CONT3	I/O	General-purpose 3 input/output pin.		
27	CONT4	I/O	General-purpose 4 input/output pin.		
28	CONT5	I/O	General-purpose 5 input/output pin.		
29	EMPH/ CONT6	O	De-emphasis monitor pin. A high level indicates playback of a de-emphasis disk, General-purpose 6 output pin. Rest to EMPH function.		L output
30	C2F	O	C2 flag output pin.		Incertitude
31	DOUT	O	Digital output pin. (EIJA format)		Incertitude
32	TEST3	I	Test input pin. A pull-down resistor is built in. Must be connected to 0V.		-

No.	Symbol	I/O	Function description		Output pin to rest
33	TEST4	I	Test input pin. A pull-down resistor is built in. Must be connected to 0V.		-
34	PCCL	I	General-purpose I/O command identification pin. A pull-down resistor is built in. Used operate similarly to LC78622E connected to open or 0V. H ; Must be connected to general-purpose port command. L ; Be able to all command control.		-
35	MUTEL/ CONT7	O	Lch one-bit DAC	Left channel mute output pin, General-purpose 7 output pin. Rest to MUTEL function.	H output
36	LVDD	-		Left channel power supply pin.	-
37	LCHO	O		Left channel output pin.	-
38	LVSS	-		Left channel ground pin. Must be connected to 0V.	-
39	RVSS	-	Rch one-bit DAC	Right channel ground pin. Must be connected to 0V.	-
40	RCHO	O		Right channel output pin.	-
41	RVDD	-		Right channel power supply pin.	-
42	MUTER/ CONT8	O		Right channel mute output pin, General-purpose 8 output pin. Rest to MUTER function.	H output
43	XVDD	-	Crystal oscillator power supply pin.		-
44	XOUT	O	Connections for a 16.934MHz crystal oscillating circuit ground pin.		-
45	XIN	I			
46	XVSS	-	Crystal oscillator ground pin. Must be connected to 0V.		-
47	SBSY	O	Subcode block synchronization signal pin.		Incertitude
48	EFLG	O	C1,C2,signal and double error correction monitor pin.		Incertitude
49	PW	O	Subcode P,Q,R,S,T,U,V and W output pin.		Incertitude
50	SFSY	O	Subcode frame synchronization signal output pin. This signal falls when the subcode are in the standby stase.		Incertitude
51	SBCK	I	Subcode readout clock input pin. This is a Schmitt input. (Must be connected to 0V when unused.)		-
52	FSX	O	Output for the 7.35kHz synchronization signal divided from the crystal oscillator pin.		Incertitude
53	WRQ	O	Subcode Q output standby output pin.		Incertitude
54	RWC	I	Read/ write control input pin. This is a Schmidt input.		-
55	SQOUT	O	Subcode Q output pin.		Incertitude
56	COIN	I	Command, data input pin from control microprocessor.		-
57	*CQCK	I	Input for both the command input acquisition clock and the SQOUT subcode readout clock input pin. This is Schmidt input.		-
58	*RES	I	Reset input pin. This pin must be set low briefly after power is first applied.		-
59	TST11	O	Test output pin. Leave open. (Notmally output a low level.)		L output
60	16M	O	16.9344MHz clock output pin.		Clock output
61	4.2M	O	4.2336MHz clock output pin.		Clock output
62	TEST5	I	Test input pin. A pull-down resistor is built in. Must be connected to 0V.		-
63	VDD3V	-	Internal circuit 3.3V system power supply pin.		-
64	TEST1	I	Test input pin. A pull-down resistor is built in. Must be connected to 0V.		-

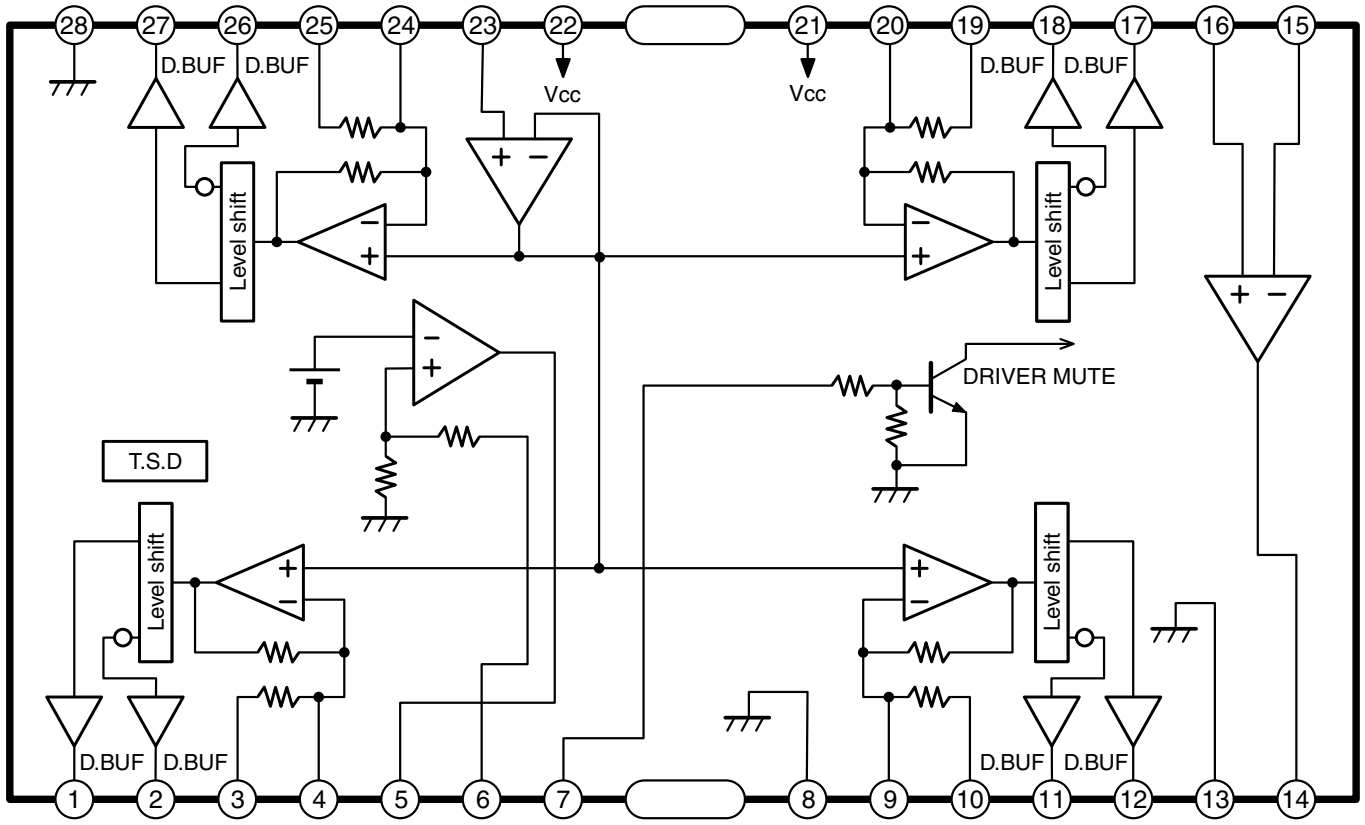
Note) The same potential must be suplied to all power supply pins, i.e., VDD,VVDD,LVDD,RVDD and XVDD.

IC BLOCK DIAGRAM & DESCRIPTION

IC102 LC78629E (DSP for CD Player)

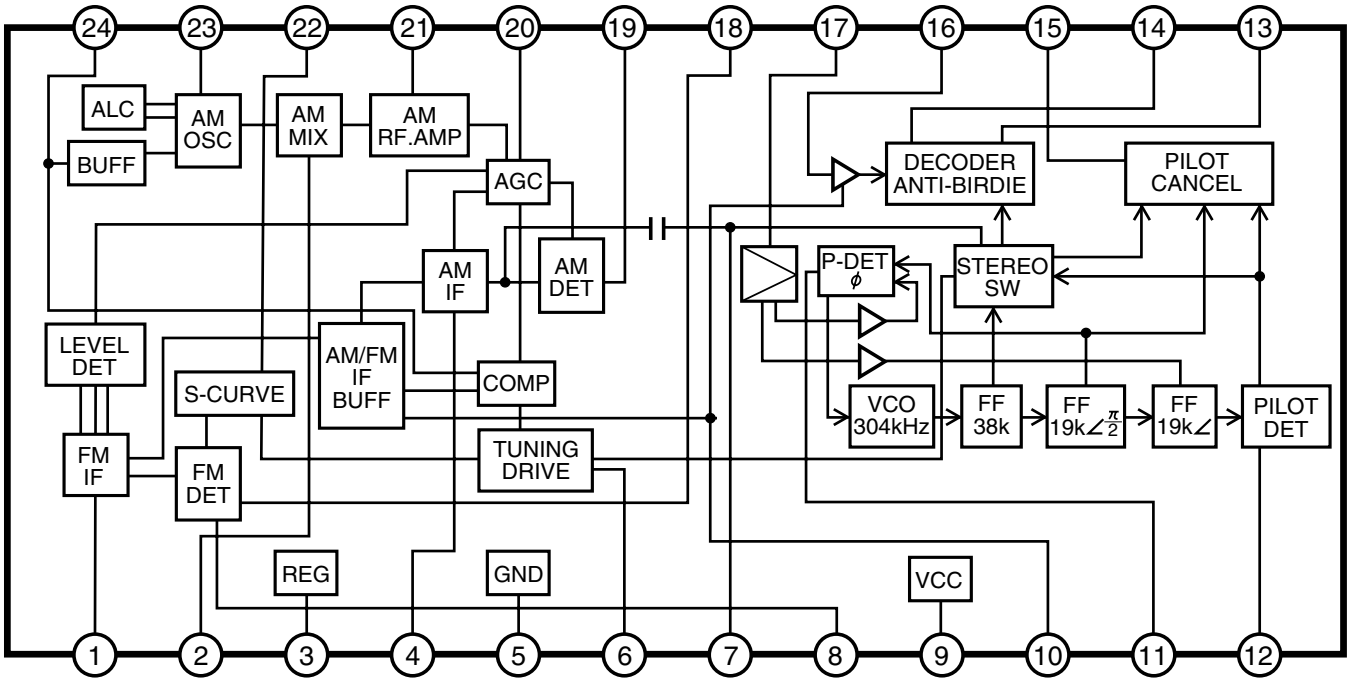


IC103 MM1469XH (CD Driver)

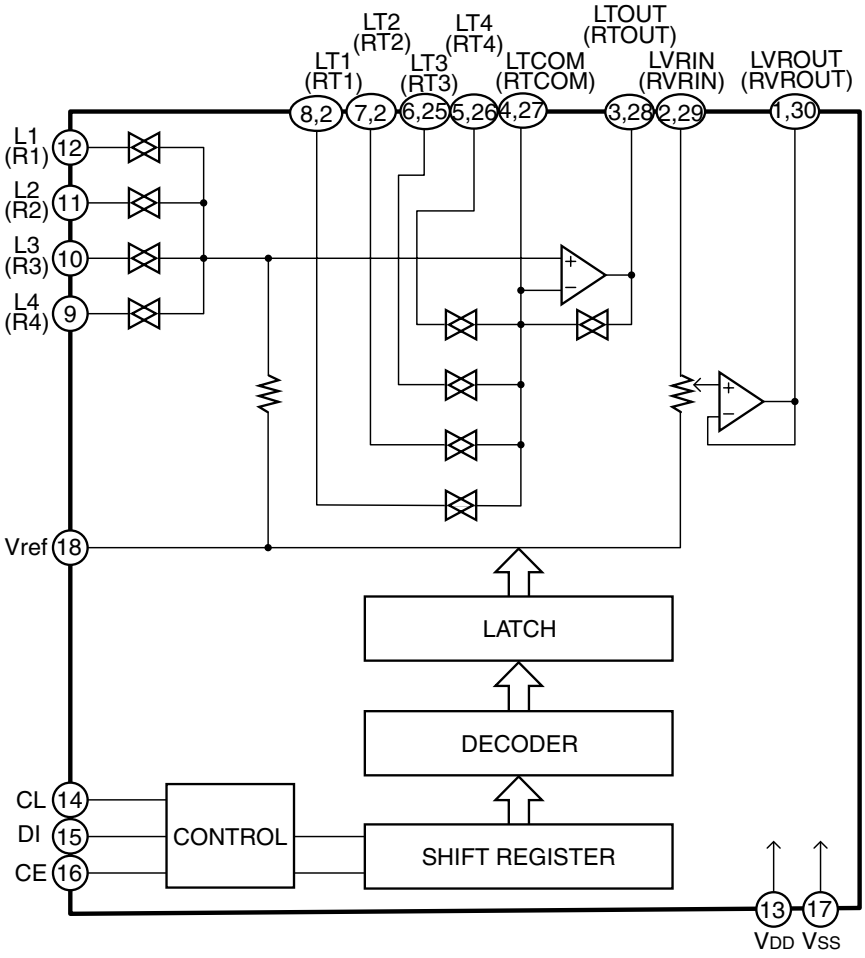


IC BLOCK DIAGRAM & DESCRIPTION

IC211 LA1844ML (Electronic Tuning-Supported Home Audio Tuner IC)

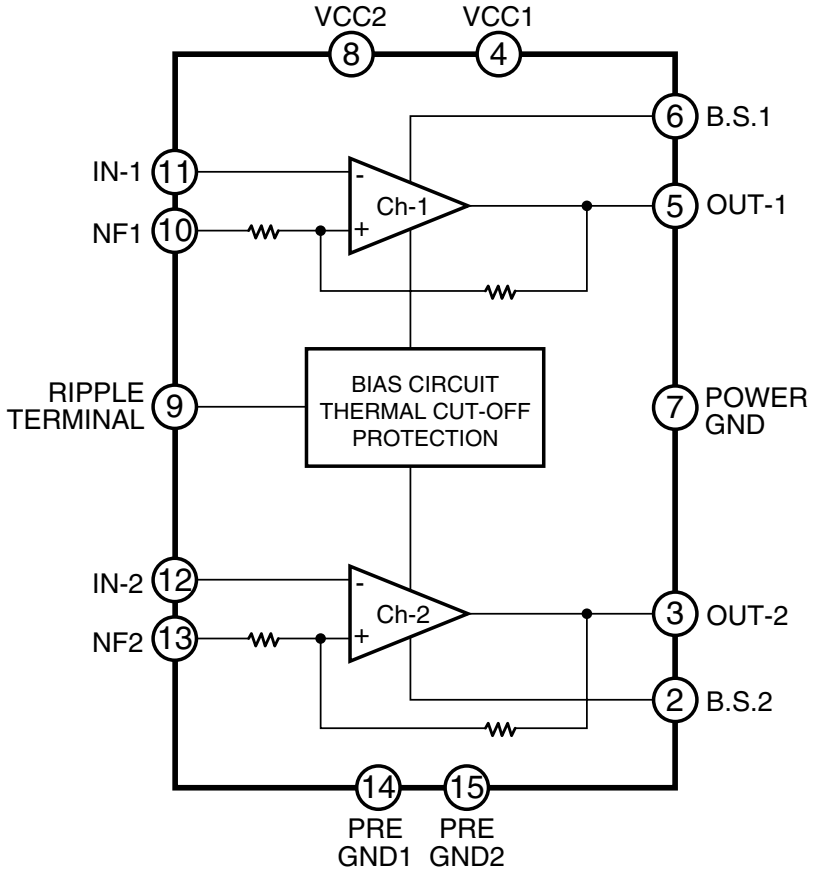


IC411 LC75392 (Single-Chip Electronic Volume Control System)

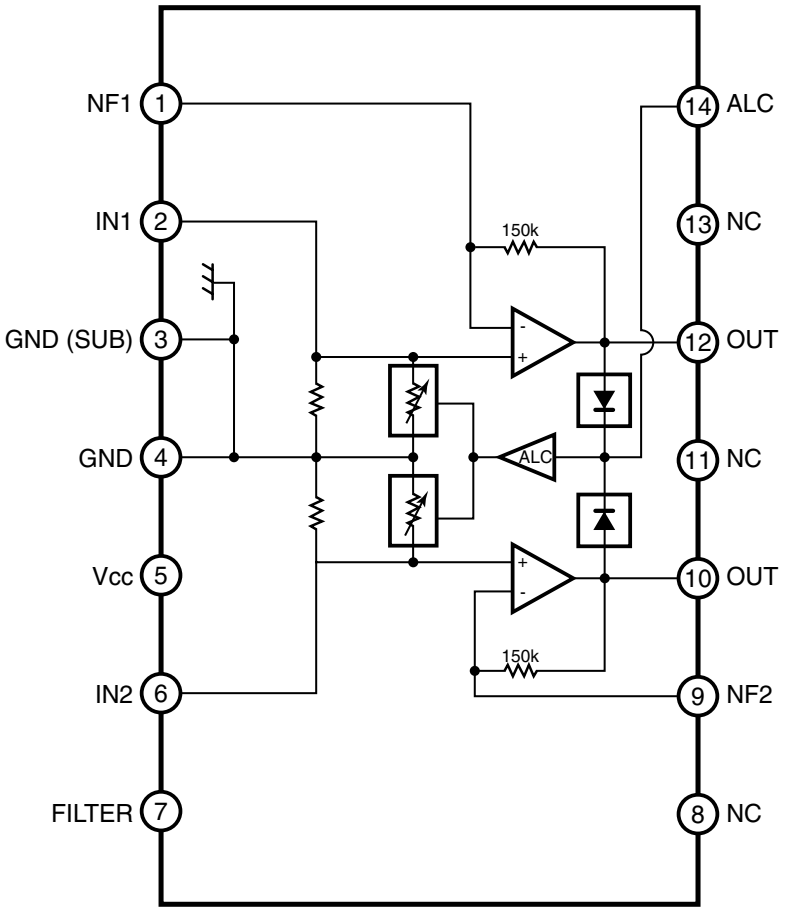


IC BLOCK DIAGRAM & DESCRIPTION

IC412 TA8229 (Audio Power IC)

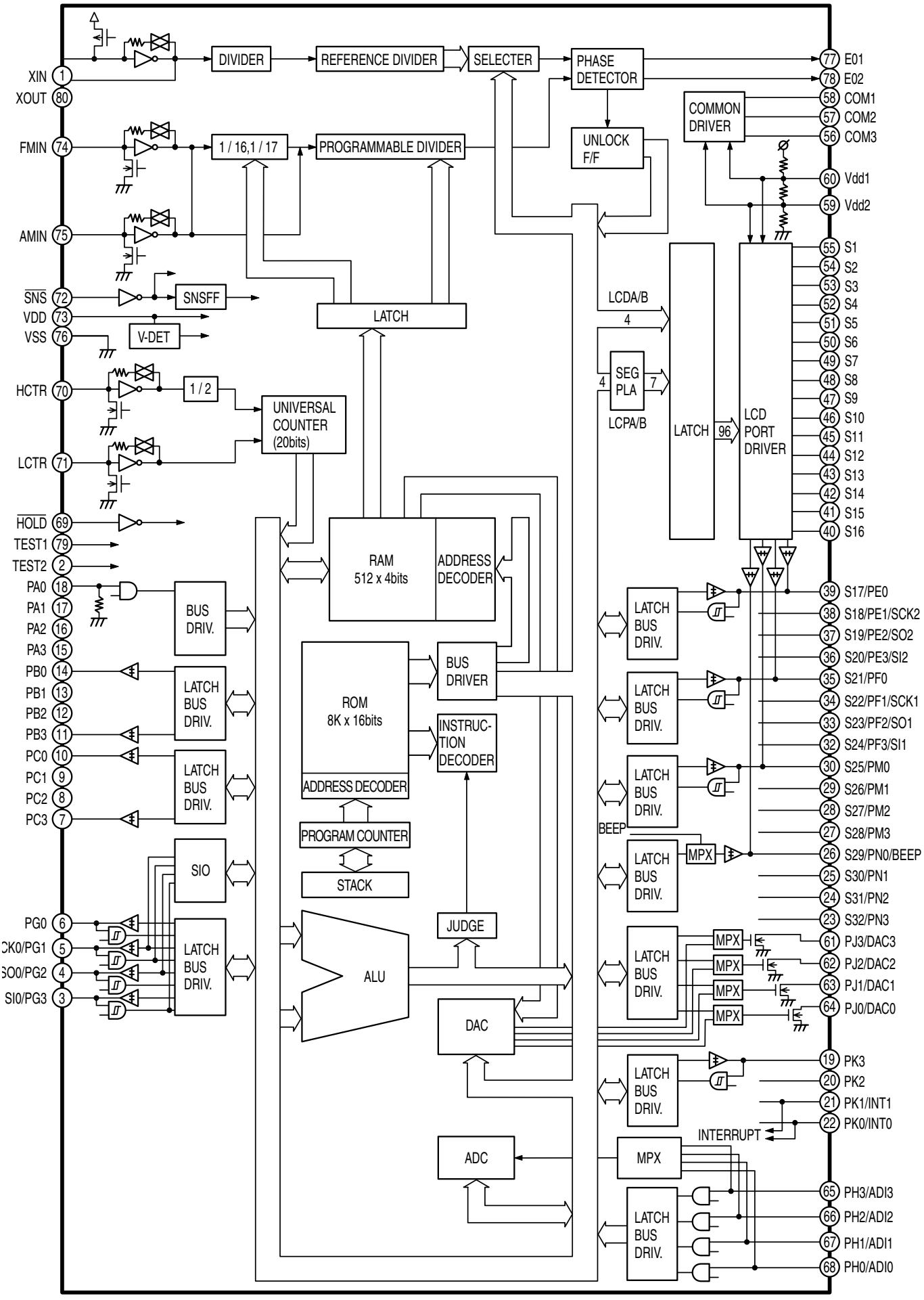


IC510 BA3314F (Dual Pre Amp for Audio)



IC BLOCK DIAGRAM & DESCRIPTION

IC601 LC72338-9C10 (Single-Chip PLL + Controller)



IC BLOCK DIAGRAM & DESCRIPTION

IC601 LC72338-9C10 (Single-Chip PLL + Controller)

Pin name	Pin No.	I/O	I/O Format	Functions
PA0 PA1 PA2 PA3	18 17 16 15	I	Pull-down resistor input	Port only for key return signal input. The threshold voltage is set to a relatively low value. When a key matrix is formed by combining PB and PC ports, maximum three simultaneous key presses can be detected. All of four pull-down resistor are set by the IOS instruction with Pn=2, bl and specification of resistor for each pin is impossible. The input is disabled in clock stop mode.
PB0 PB1 PB2 PB3 PC0 PC1 PC2 PC3	14 13 12 11 10 9 8 7	O	Unbalance CMOS Push-pull	Port only for key source signal output. Since the output transistor circuit is an unbalanced CMOS structure, diodes to prevent short-circuiting due to multiple key presses are not required. In clock stop mode, these pins go to the output high-impedance state and hold this state until an output instruction is executed.
PG0 PG1/SCK0 PG2/SO0 PG3/SI0	6 5 4 3	I/O	CMOS posh-pull	General-purpose output/serial I/O ports. Schmidt type input the IOS instruction performs switching between general-purpose I/O ports and serial I/O ports, and between input and output for general-purpose I/O ports. • When used as general-purpose I/O ports these pins can be set for input or output in bit units(bit I/O), and are set for use as general-purpose I/O ports by the IOS instruction with Pn=0. b0=SI/O 0 0 • • • general-purpose port 1 • • • SI/O port Specification of input or output is made by the IOS instruction in bit units. PG • • • Pn=6 0 • • • Input 1 • • • Output • When used as serial I/O ports these pins are set for serial I/O port use by the IOS instruction with Pn=0. The content of serial I/O data buffer is saved or load by the INR and OUTR instructions. *Pin setup states when used as serial I/O ports PG0 • • • general-purpose input or output PG1 • • • SCK0 output in internal block SCK0 input in external block PG2 • • • SO0 output PG3 • • • SI0 input In clock stop mode, input is disabled and these pins go to the high-impedance state. During the power-on reset, these pins become general-purpose input ports.
XIN XOUT	1 80	I O	-	4.5MHz crystal oscillator pin.
EO1 EO2	78 77	O	CMOS tristate	Charge pump output pin. These pins go to high-impedance state when the $\overline{HOLD}$ pin is set low in the hold enable state. In ckock stop mode, during the power-on reset and in the PLL stop state, these pins go to the high-impedance state.
VSS VDD	76 31,73	-	-	Power supply pin.
FMIN	74	I		FMVCO (local oscillator) input pin. This pin is selected by the PLL instruction CW1 (b1=0,b0=don't care). Capacitor coupling must be used for signalinput. Input is disabled when the HOLD pin is set low inthe hold enable state. Input is disable in clock stop mode,during the power-on reset, and in the PLL stop state.
AMIN	75	I		AMVCo (lcal oscillator) input pin. This pin is selected and the band set by the PLL instruction CW1 (b1,b0). b1 b0 Band 1 0 2 to 40MHz (SW) 1 1 0.5 to 10MHz (MW,NW) Capacitor coupling must be used for signal input. Input is disabled when the $\overline{HOLD}$ pin is set low in the hold enable state. Input is disabled in clock stop mode, during the power-on reset, and in the PLL stop state.
HCTR	70	I		Universal counter / general-purpose input port. The IOS instruction b3 with Pn=3 switches the pin function between universal counter input and general-purpose input. • Frequency measurement The universal counter function is selected by an IOS instruction with Pn=3 and b2=0. HCTR frequency measure-ment mode is set up by a UCS instruction with b3=0 and b2=0, and counting is started with a UCC instruction after the count time is selected. The CNTEND flag is set when the count completes. To operate this circuit as an AC amplifier in this mode, the input must be capacitor coupled. • For use as the general-purpose input pin. The general-porpose input port function is selected by an IOS instruction with Pn=3 and b2=1. An internal register (address OEH) input instruction INR(b0) is used to acquire data from this pin. Input is disabled in clock stop mede (the input pin will be pulled down.) During the power-on reset, the universal counter function is selected.
$\overline{SNS}$	72	I		Voltage sense / general-purpose input pin port. This circuit is designed for a relatively low input threshold voltage. • For use as the voltage sense pin This input pin is is used to determine whether or not a power failure occurred after recovery from backup (clock stop) mode. An internal sense F/F is used for this determination. The sense F/F is tested with a TUL instruction (b2). • For use as the general-purpose input port When used as a genaral-purpose input port, the state is sensed by using a TUL instruction (b3). Since unlike other input ports, input is not disablle in clock stop mode and during the power-on reset, special care is required with respect to through currents.

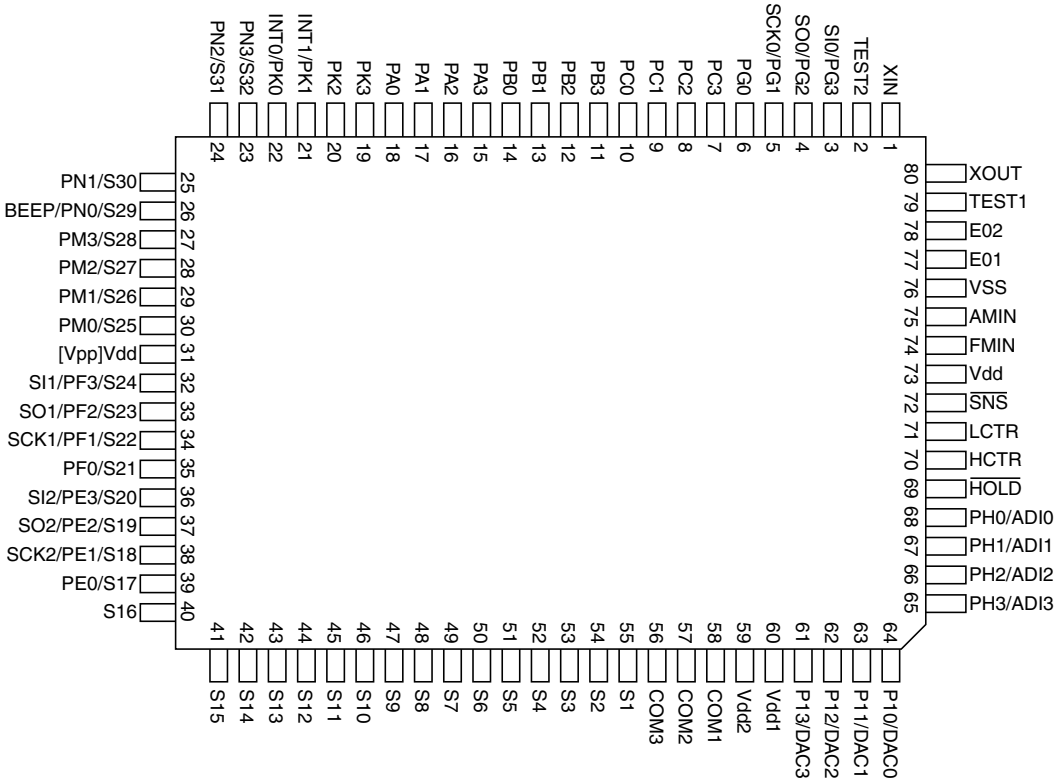
Pin name	Pin No.	I/O	I/O Format	Functions
LCTR	71	I		Universal counter (freqency and period measurement) / general-purose input port. This IOS instruction b3 with Pn=3 swithes the pin function between universal counter input and general-purpose input. • Frequency measurement The universal counter function is selected by an IOS instruction with Pn=3 and b3=0. LCTR frequency measure-ment mode is set up by a UCS instruction with b3=0 and b2=1, and counting is started with a UCC instruction after the count time is selected. The CNTEND flag is set when the count completes. To operate this circuit as an AC amplifier in this mode, the input must be capacitor coupled. • Period measurement With the universal counter function selected, a UCS instruction with b3=1 and b2=0 sets up the period measurement mode and a UCC instruction starts counting after selecting the count time. The CNTEND flag is set when the count completes. In this mode, the signal must be input with DC coupling to turn off the bias feedback resistor. • For use as general-purpose input pin use. The general-purpose input port function is selected by an IOS instruction with Pn=3 and b3=1. An internal register (address OEH) input instruction INR(b1) is used to acquire data from this pin. Input is disabled in clock stop mode. (The input pin will be pulled down.) During the power-on reset. The universal counter function(in HCTR frequency measurement mode) is selected.
$\overline{HOLD}$	69	I		PLLcontrol and CLOCK STOP mode control pin. Setting this pin low in the hold enable state disables input to the FMIN and AMIN pins and sets the E0 pin to the high-impedance state. To enter clocl stop mode, set the HOLDEN flag, set this pin low, and execute a CKSTP instruction. To clear clock stop mode set this pin high.
PH0/ADI0 PH1/ADI1 PH2/ADI2 PH3/ADI3	68 67 66 65	I		General-purpose input ports/ADC input pins. The IOS instruction with Pn=7 switches the pin function between genetal-purpose input ports and ADC inputs. • For use as the general-purpose input port The IOS instruction with Pn=7 specifies the use as general-purpose input port in bit units. • For use as ADC input pin The IOS instruction with Pn=7 specifies the use as ADC in bit units. The IOS instruction with Pn=1 specifies the pin to convert. The UCC instruction (b2) starts a conversion. The ADCE flag will be set when the conversion completes. Note) Executing an input instruction for a port specified for ADI use will always return low since input is disabled. These pins must be set up for general-purpose input port usage before an input instruction is excuted. (In other words, the port must be set to the general-porpose input function before the input instruction is executed.) Input is disabled in clock stop mode. During the power-on reset these pins go to the general-purpose input port function.
PJ0/DAC0 PJ1/DAC1 PJ2/DAC2 PJ3/DAC3	64 63 62 61	O	Nch open drain	General-purpose output ports/DAC input pin. The IOS instruction with Pn=9 switches the pin function between general-purpose output ports and ADC inputs. Since these pins are open drain circuit, pull-up resistors are required in exrernal circuit accepting these outputs. • For use as general-purpose output port The IOS instruction with Pn=9F specifies general-purrpose input port use in bit units. • For use as DAC The IOS instruction Pn=9 is used to switch the port in bit units. DAC data is loaded into tne DAC (0 to 3) specified with the DAC instruction, Although PWM waveform is output as soon as the port is switched, the data prior to that load is output for up to 114μs (1/8.791kHz) after data is loaded. The general-purpose output port function is selected after a power-on reset, and the output go to the transistor off (H output) state.
PK0/INT0 PK1/INT1 PK2 PK3	22 21 20 19	I/O	CMOS push-pull	General-purpose I/O / external interrupt ports There is no instruction that switches the function between general-purpose ports and external interrupt ports. These pins function for input only when the external interrupt enable flag is set. (Output disables) • For use as general-purpose I/O port These pins can be set for input or output in bit units (bit I/O). The IOS instruction is used to specify input or output in bit units. • For use as external interrupt pin This function can be used by setting the external interrupt enable flags (INT0EN and INT1EN) in status register 2. The corresponding pin is automatically set to the input port. To enable interrupt operation, the interrupt enable flag (INTEN) in status register 1 must also be set. The IOS instruction with Pn=3, b1=INT1, and b0=INT0 is used to select rising or falling edge detection. In clock stop mode, input is disabled and these pins go to the high-impedance state. During the power-on reset, these pins go to the general-purpose input port function.
Vdd1	57			Pin for external application of 2/3 voltage of LCD drive bias.
Vdd2	58			Pin for external application of 1/3 voltage of LCD drive bias.
TEST1 TEST2	79 2			LSI test pin. These pins must be either left open or connected to ground.
COM1 COM2 COM3	58 57 56	O	CMOS three value output	LCD driver common output pin. Driver format 1/3 duty, 1/3 bias. This pin is fixed at the low level in CLOCK STOP mode. This pin is fixed at the low level after a power-on reset.
S1 I S16	55 I 40	O	CMOS three value output	LCD driver common output pin. Driver format 1/3 duty, 1/3 bias. The frame frequency 100MHz. This pin is fixed at the low level in CLOCK STOP mode. This pin is fixed at the low level after a power-on reset.

IC BLOCK DIAGRAM & DESCRIPTION

IC601 LC72338-9C10 (Single-Chip PLL + Controller)

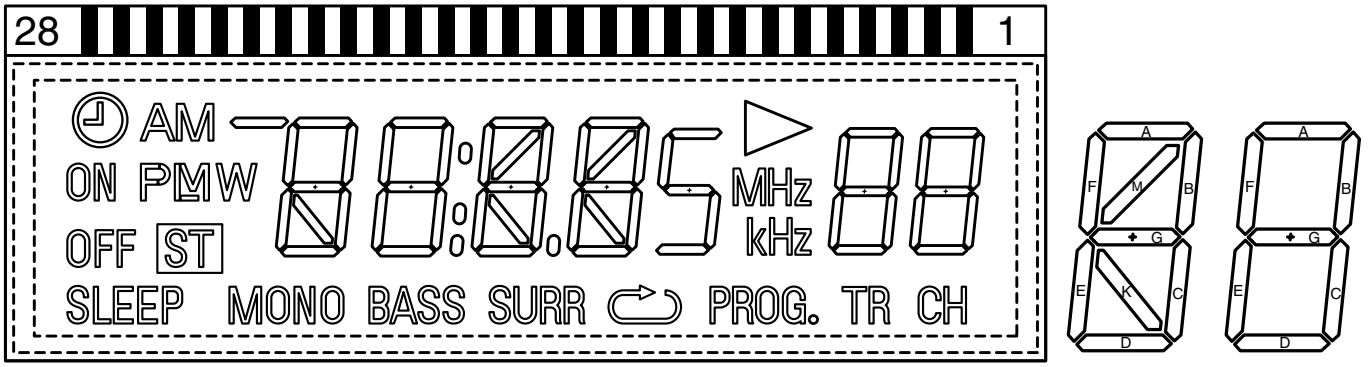
Pin name	Pin No.	I/O	I/O Format	Functions
S17/PE0 S18/PE1/SCK2 S19/PE2/SO2 S20/PE3/SI2	39 38 37 36	I/O	CMOS three value output and push-pull	LCD driver segment output, general-porpose input/output and serial I/O ports The IOS instruction is used to switch between the LCD driver segment output, general-purpose I/O, and serial I/O functions, and to switch between input and output of the general-purpose input port function. • For use as segment output These pins can be set in bit units. The IOS instruction with Pn=ODH specifies segment output use in bit units. b0=S17/PE0 0 • • • Segment output b1=S18/PE1 1 • • • PE0 to 3 output b2=S19/PE2 b3=S20/PE3 • For use as general-purpose input /output port These pins can be set for input /output in bit units. (1 bit I/O) b2=SI/O2 0 • • • Genetal-purpose port 1 • • • SI/O port Input /output is specified with the IOS instruction in bit units. PE • • • Pn=4 0 • • • Input 1 • • • Output • For serial I/O port The serial I/O port function is specified with the IOS instruction (Pn=0). The contents of the serial I/O data buffer can be saved and loaded with the INR and OUTR instructions. *Pin setup states when used as a serial I/O port PE0 • • • General-purpose input /output PE1 • • • SCK2 output in internal clock mode SCK2 output in external clock mode PE2 • • • SO2 output PE3 • • • SI2 input In CLOCK STOP mode, if this port is used as a general-purpose I/O port or as a serial I/O port, the pins go to the input disabled high-impedance state. If used for segment output, the pins fixed at the low level. The segment output port function is selected after a power-on reset.
S25/PM0 S26/PM1 S27/PM2 S28/PM3	30 29 28 27	I/O	CMOS three value output and push-pull	LCD driver segment output, general-porpose input /output ports. The IOS instruction is used to switch between the LCD driver segment output, general-purpose I/O port, and serial I/O to switch between input and output of the general-purpose input /output port function. • For use as segment output These pins can be set in 4 bits units. The IOS instruction with Pn=OEH specifies segment output use in bit units. b0=S25 to 28/PM0 to 3 0 • • • Segment output 1 • • • PM0 to 3 • For use as general-purpose input /output port These pins can be set for input /output in bit units. Input /output is specified with the IOS instruction in bit units. PM • • • Pn=OCH 0 • • • Input 1 • • • Output In CLOCK STOP mode, if this port is used as a general-purpose I/O port, the pins go to the input disabled high-impedance state. If used for segment output, the pins are fixed at the low level. The segment output port function is selected after a power-on reset.

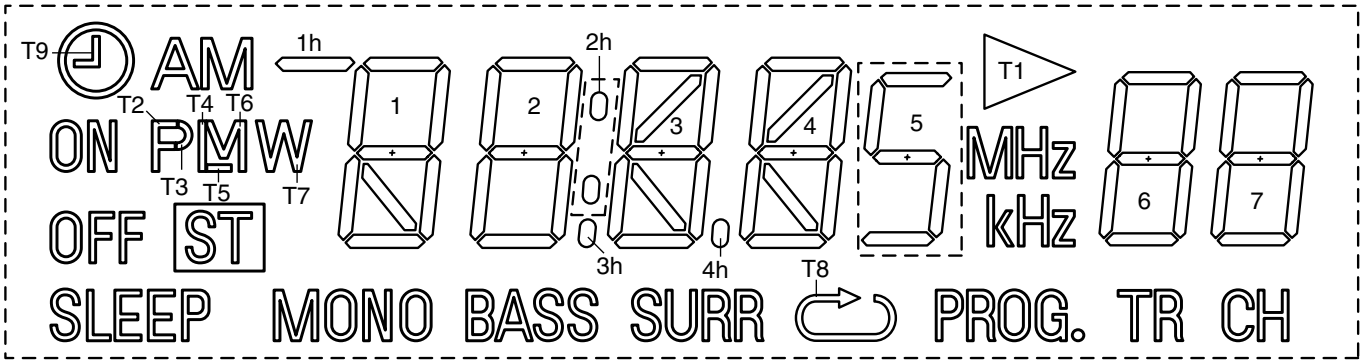
Pin name	Pin No.	I/O	I/O Format	Functions
S21/PF0 S22/PF1/SCK1 S23/PF2/SO1 S24/PF3/SI1	35 34 33 32	I/O	CMOS three value output and push-pull	LCD driver segment output, general-porpose input/output and serial I/O ports. The PF0 to 3 inputs are in the Schmidt format. The IOS instruction is used to switch between the LCD driver segment output, general-purpose I/O, and serial I/O functions, and to switch between input and output of the general-purpose input port function. • For use as segment output These pins can be set in 4 bits units. The IOS instruction with Pn=OEH specifies segment output use in bit units. b0=S21 to 24/ PF0 to 3 0 • • • Segment output 1 • • • PE0 to 3 • For use as general-purpose input /output port These pins can be set to input /output in bit units. (1 bit I/O) b1=SI/O 1 0 • • • Genetal-purpose port 1 • • • SI/O port Input /output is specified with the IOS instruction in bit units. PF • • • Pn=5 0 • • • Input 1 • • • Output • For use as serial I/O port The serial I/O port function is specified with the IOS instruction (Pn=0). The contents of the serial I/O data buffer can be saved and loaded with the INR and OUTR instructions. *Pin setup states when used as a serial I/O port PF0 • • • General-purpose input /output PF1 • • • SCK1 output in internal clock mode SCK1 output in external clock mode PF2 • • • SO1 output PF3 • • • SI1 input In CLOCK STOP mode, if this port is used as a general-purpose I/O port or as a serial I/O port, the pins go to the input disabled high-impedance state. If used for segment output, the pins are fixed at the low level. The segment output port function is selected after a power-on reset.
S29/PN0/BEEP S30/PN1 S31/PN2 S32/PN3	26 25 24 23	O	CMOS three value output and push-pull	Segment output/general-porpose input port 1/ BEEP tone output pins. The IOS instruction is used to switch between the segment output port and the PN0 to 3 functions. The BEEP instruction switches between the general-purpose output port and BEEP tone function. • For use as segment output These pins can be set in 3 bits units. The IOS instruction with Pn=OEH specifies segment output use in bit units. b2=S29 to 32/ PN0 to 3 0 • • • Segment output 1 • • • PN0 to 3 • For use as general-purpose output. The general-porpose output port function is selected with the BEEP instruction (b3=0). PN1 to 3 are dedicated general-purpose output function pins. • For use as BEEP output pin The BEEP instruction with b3=1 sets the BEEP output. The BEEP instruction bit b0,b1 and b2 sets the frequency. When this is set as the BEEP port, executing an output instruction will rewrite the internal latch data but has no influence on the output. These pins go to the output high-impedance state in clock stop mode. If used for segment output, the pins are fixed at the low level. These pins go to the output high-impedance state during the power-on reset and hold that state until an output instruction is executed.



LCD DISPLAY DESCRIPTION

LCD60

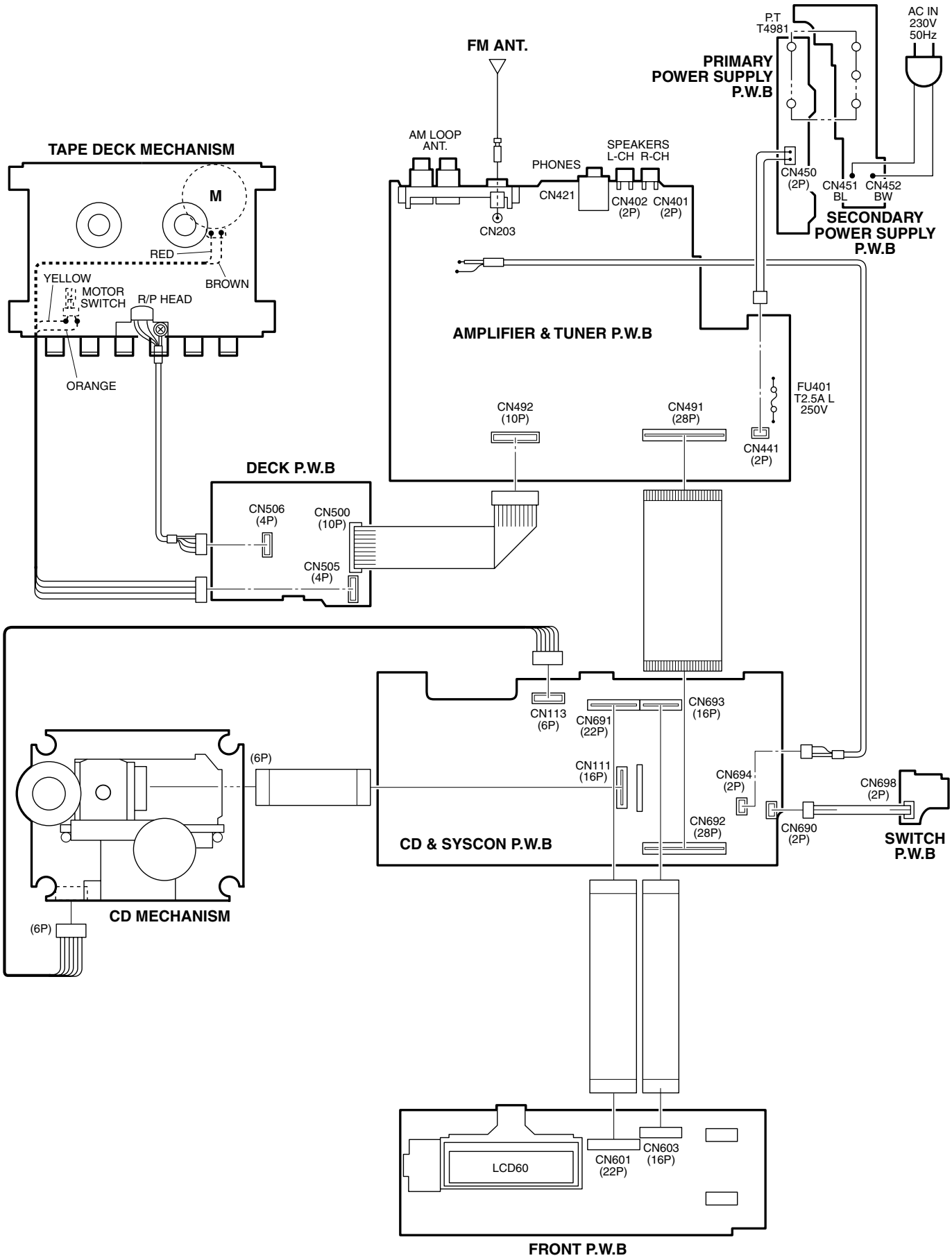




PAD NO.	IC NO.	COM1	COM2	COM3
1	C1	COM1	– –	– –
2	C2	– –	COM2	– –
3	C3	– –	– –	COM3
4	S1	7A	7F	7E
5	S2	7B	7G	7D
6	S3	ON	7C	CH
7	S4	6A	6F	6E
8	S5	6B	6G	6D
9	S6	OFF	6C	TR
10	S7	T1	MHz	kHz
11	S8	5	PROG.	BASS
12	S9	T5	T6	ST
13	S10	4A	4F	4E
14	S11	4B	4G	4D

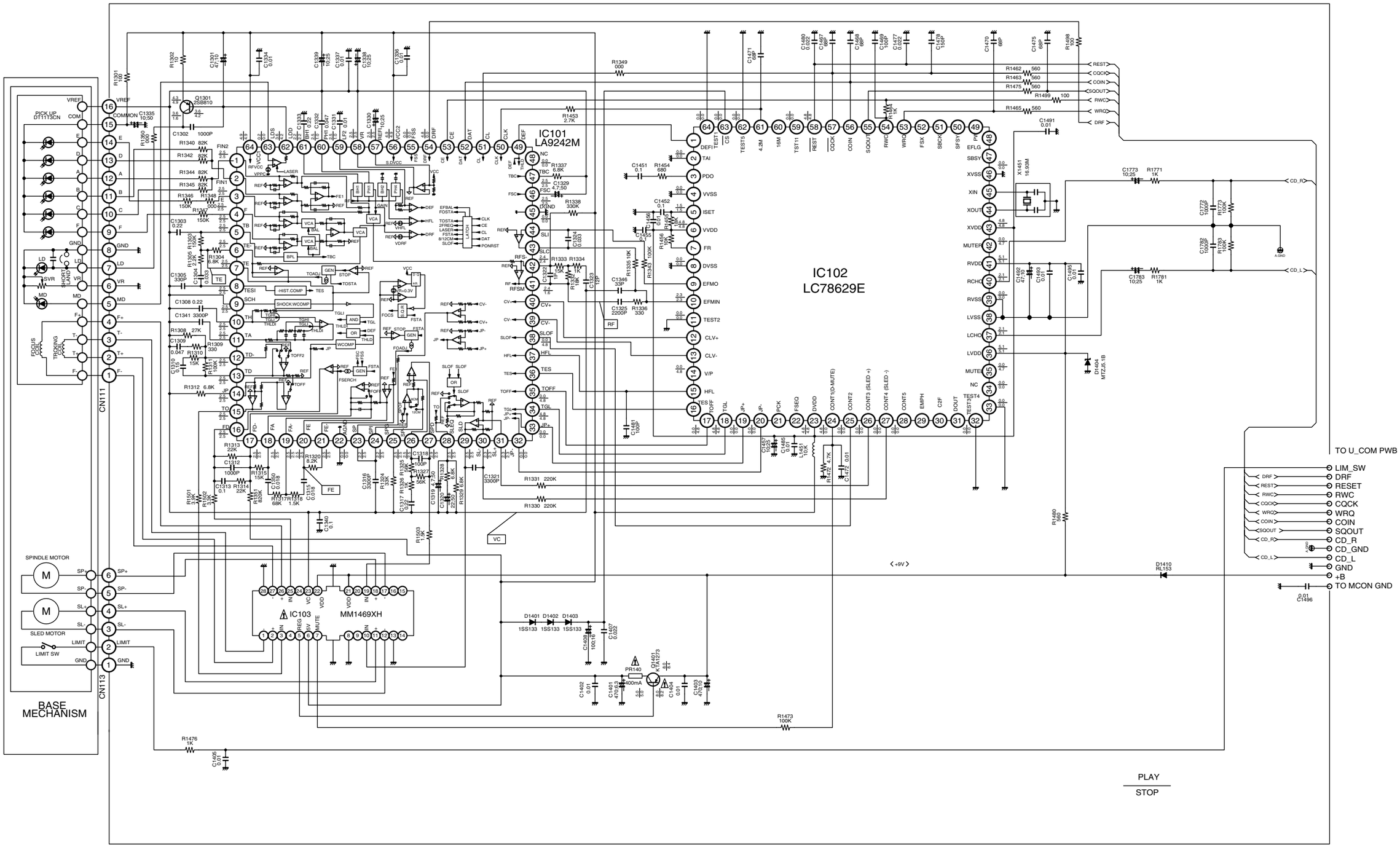
PAD NO.	IC NO.	COM1	COM2	COM3
15	S12	4M	4C	4K
16	S13	3A	3F	3E
17	S14	3B	3G	3D
18	S15	3M	3C	3K
19	S16	T2	T4	T7
20	S17	T9	T3	– –
21	S18	T8	4h	3h
22	S19	2A	2F	2E
23	S20	2B	2G	2D
24	S21	2h	2C	MONO
25	S22	1A	1F	1E
26	S23	1B	1G	1D
27	S24	1h	1C	1K
28	S25	SURR	SLEEP	AM

WIRING CONNECTION



This is a basic wiring connection.

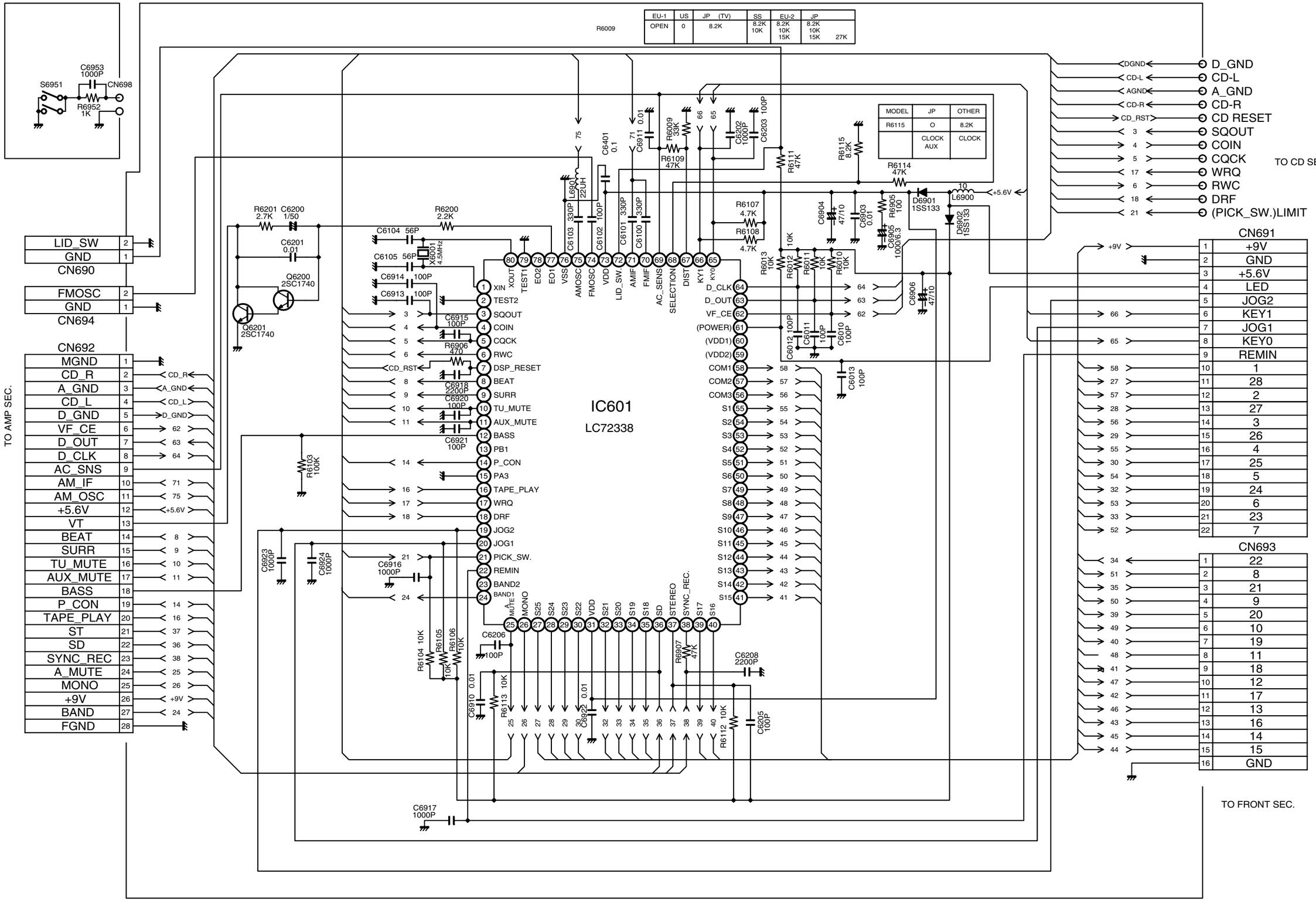
SCHEMATIC DIAGRAM (CD & SYSCON) CD Section



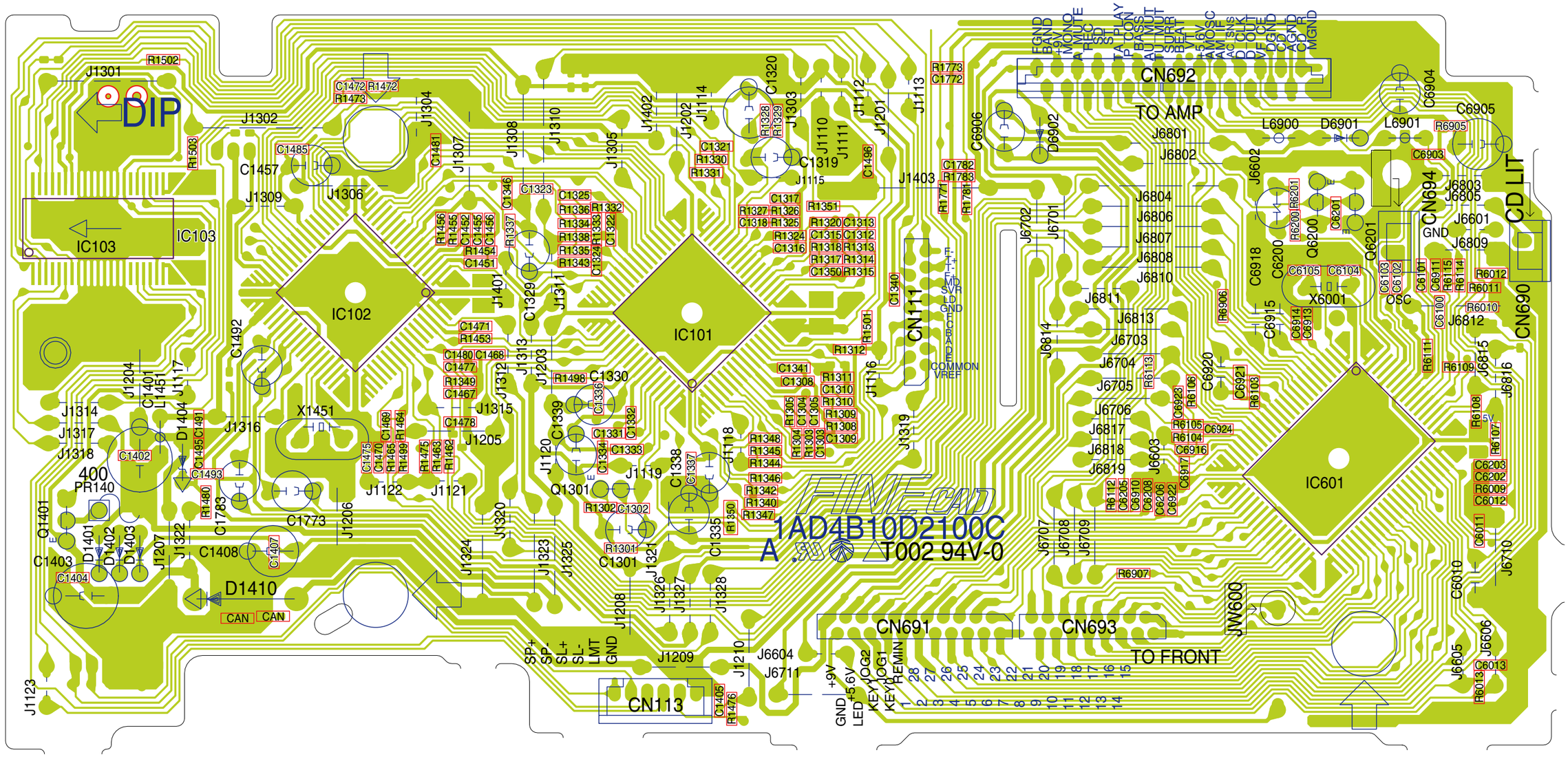
This is a basic schematic diagram.

PRODUCT SAFETY NOTICE

Each precaution in this manual should be followed during servicing. Components identified with the IEC symbol ⚠ and ⚠ mark in the parts list and the schematic diagram designated components in which safety and performance can be of special significance. When replacing a component identified by ⚠ and ⚠ , use only the replacement parts designated, or parts with the same ratings of resistance, wattage or voltage that are designated in the parts list in this manual. Leakage-current or resistance measurements must be made to determine that exposed parts are acceptably insulated from the supply circuit before returning the product to the customer.

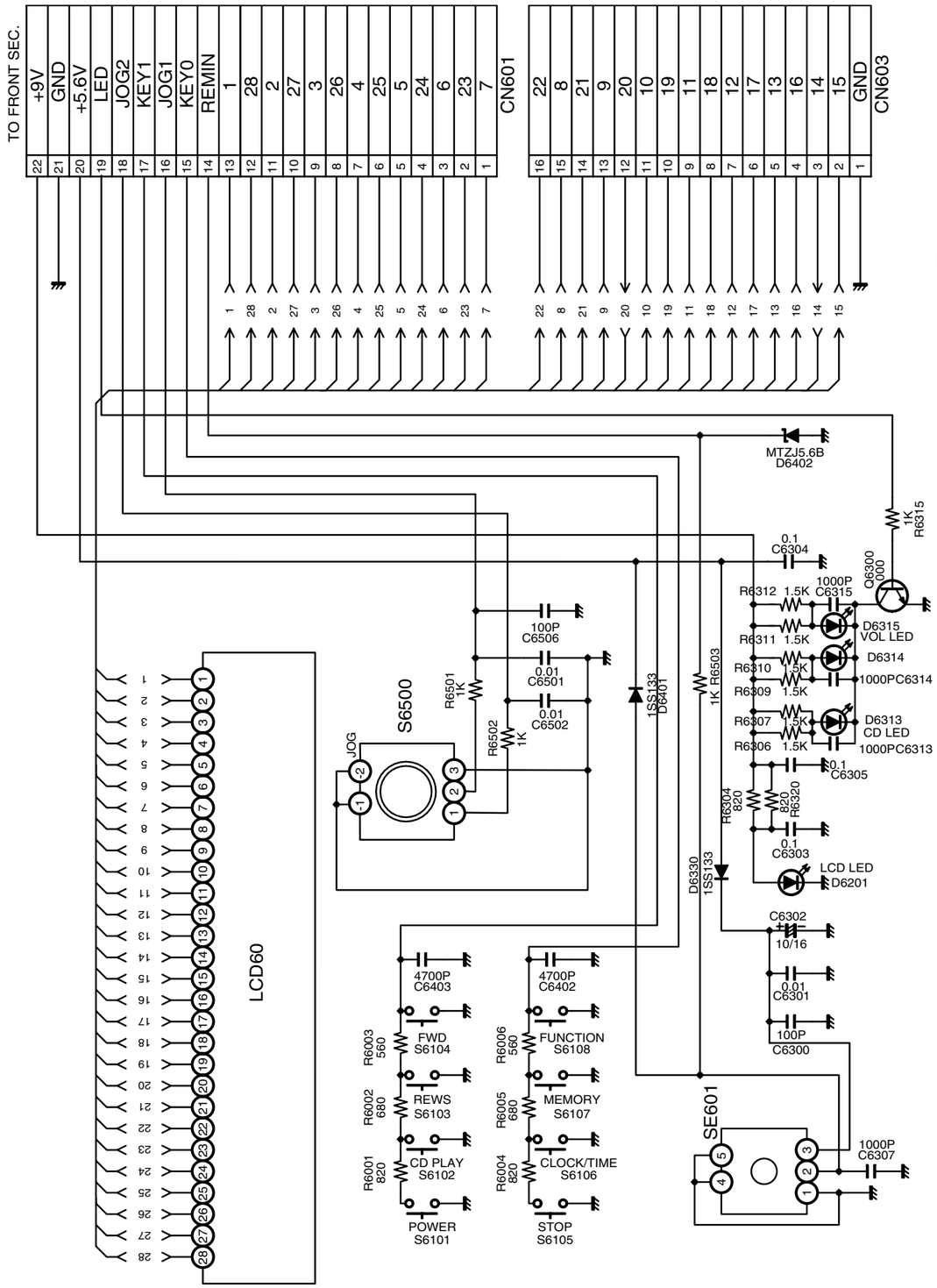


This is a basic schematic diagram.



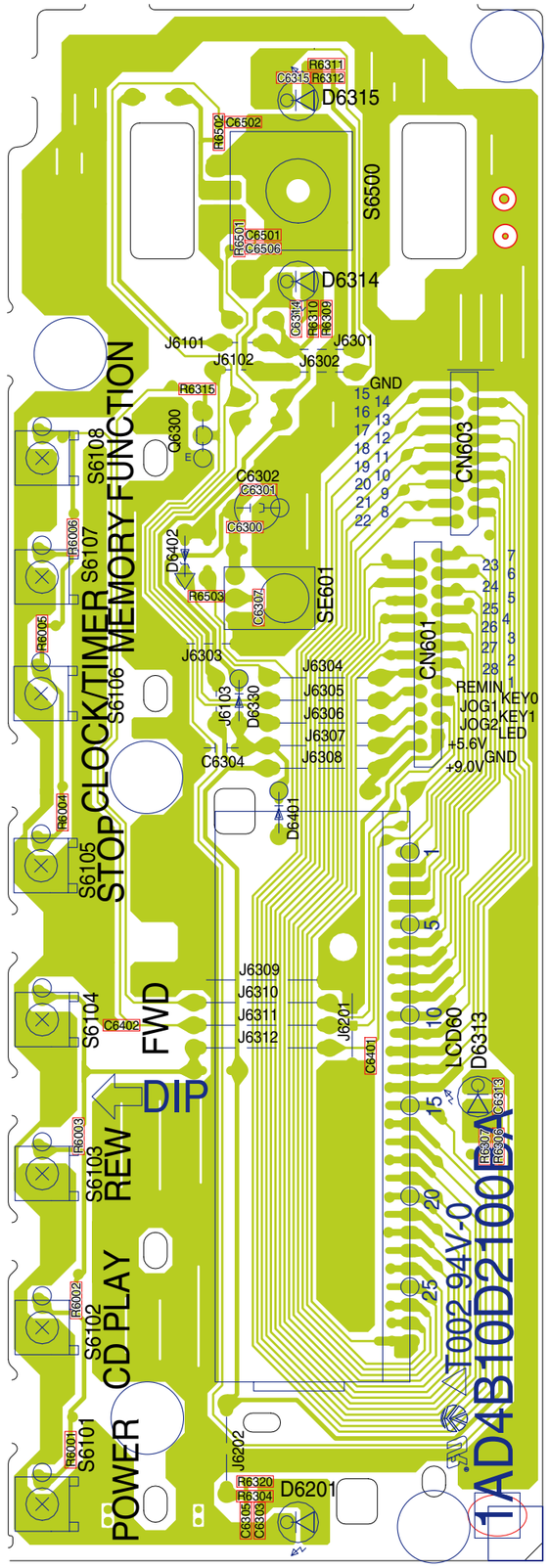
This is a basic wiring diagram.

SCHEMATIC DIAGRAM (FRONT)



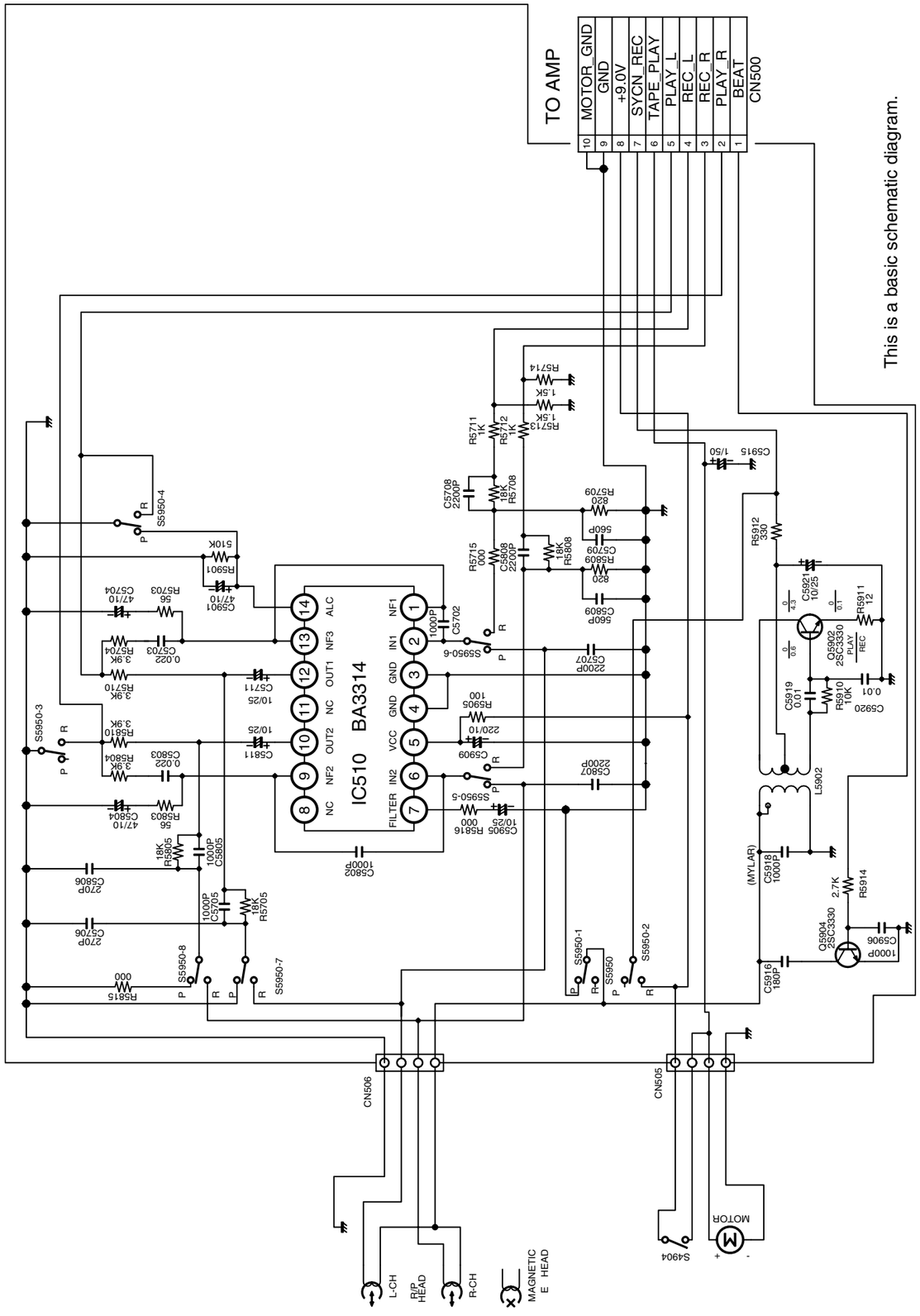
This is a basic schematic diagram.

WIRING DIAGRAM (FRONT)



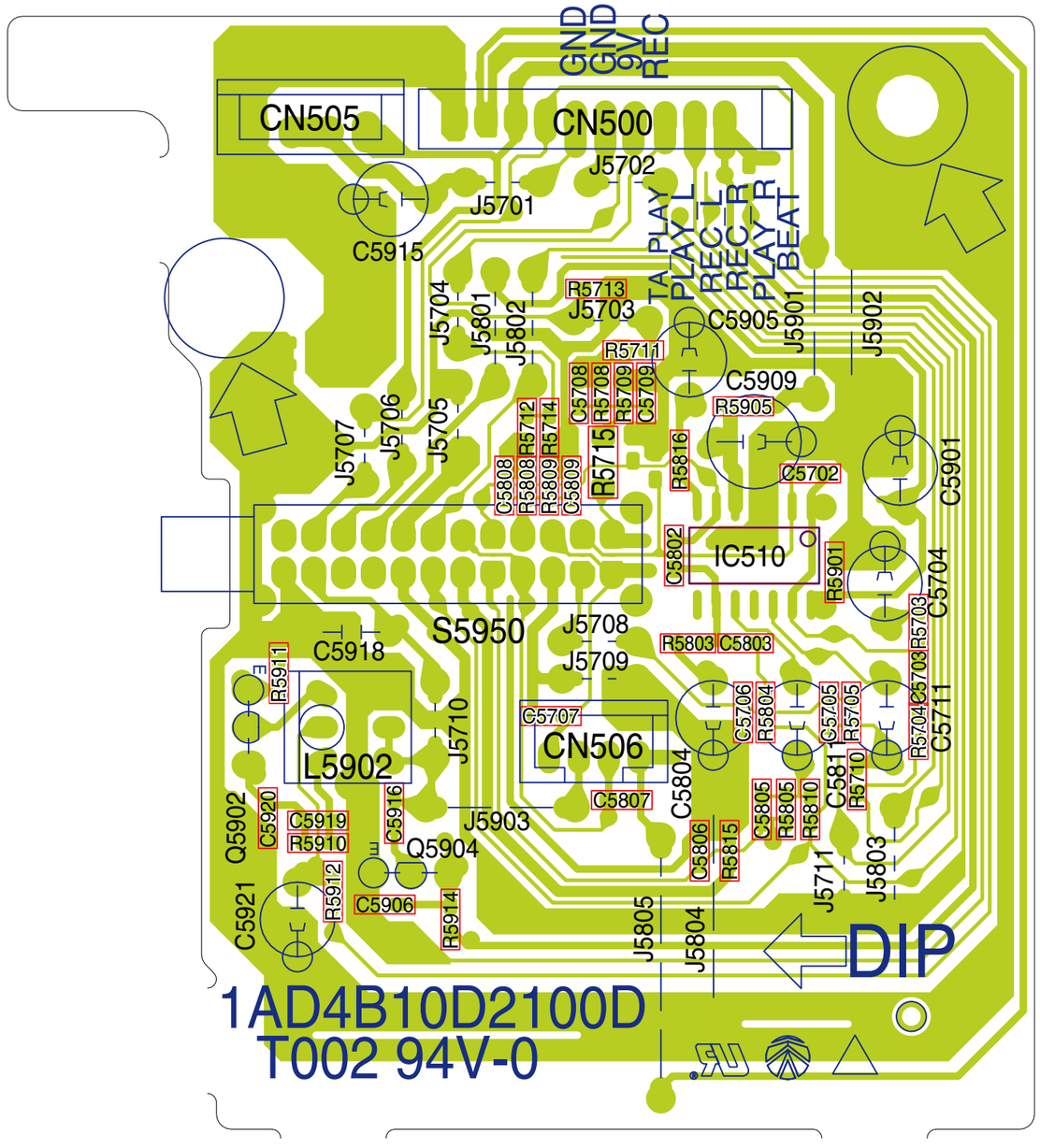
This is a basic wiring diagram.

SCHEMATIC DIAGRAM (DECK)



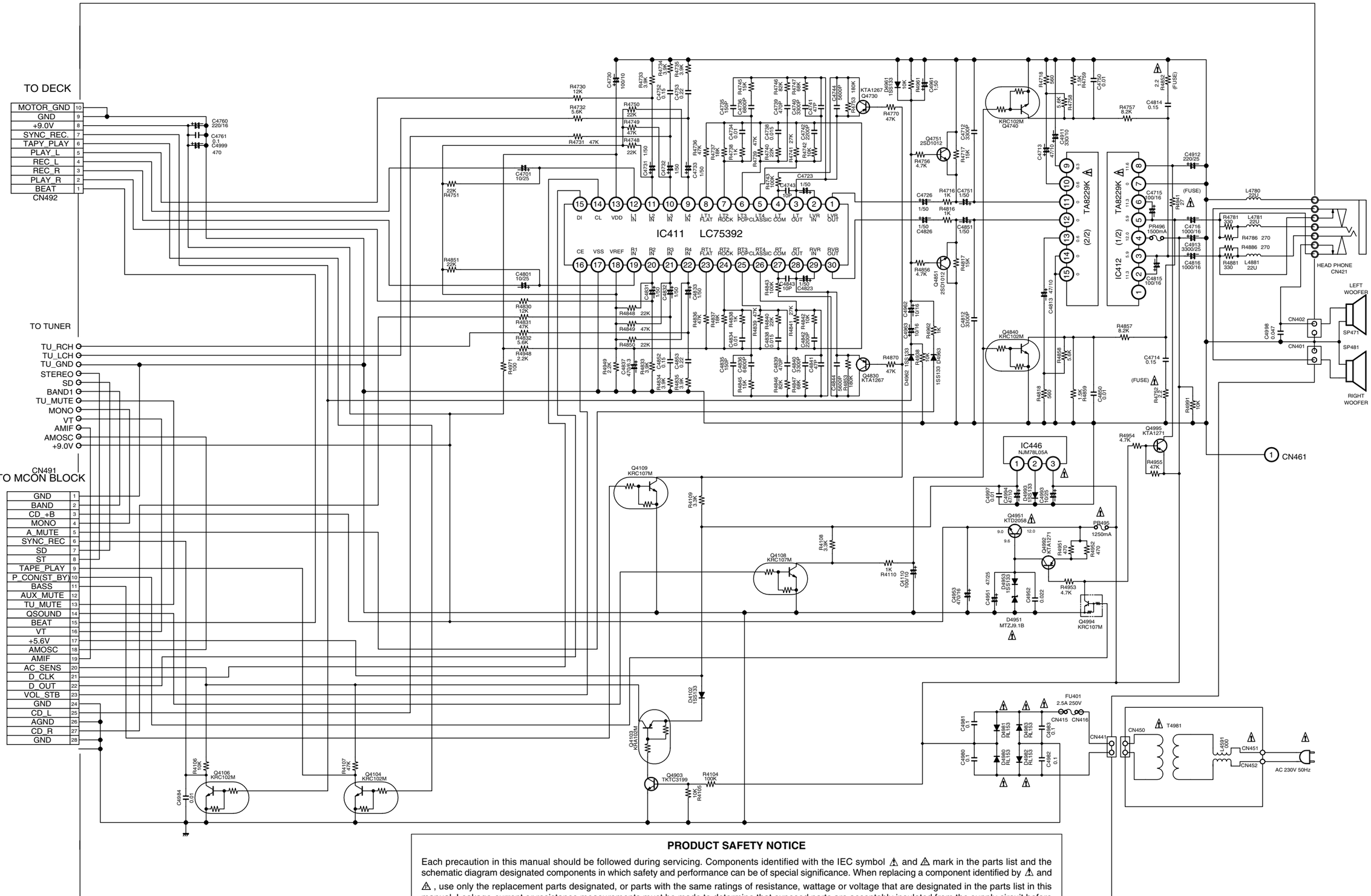
This is a basic schematic diagram.

WIRING DIAGRAM (DECK)



This is a basic wiring diagram.

SCHEMATIC DIAGRAM (AMPLIFIER)



PRODUCT SAFETY NOTICE

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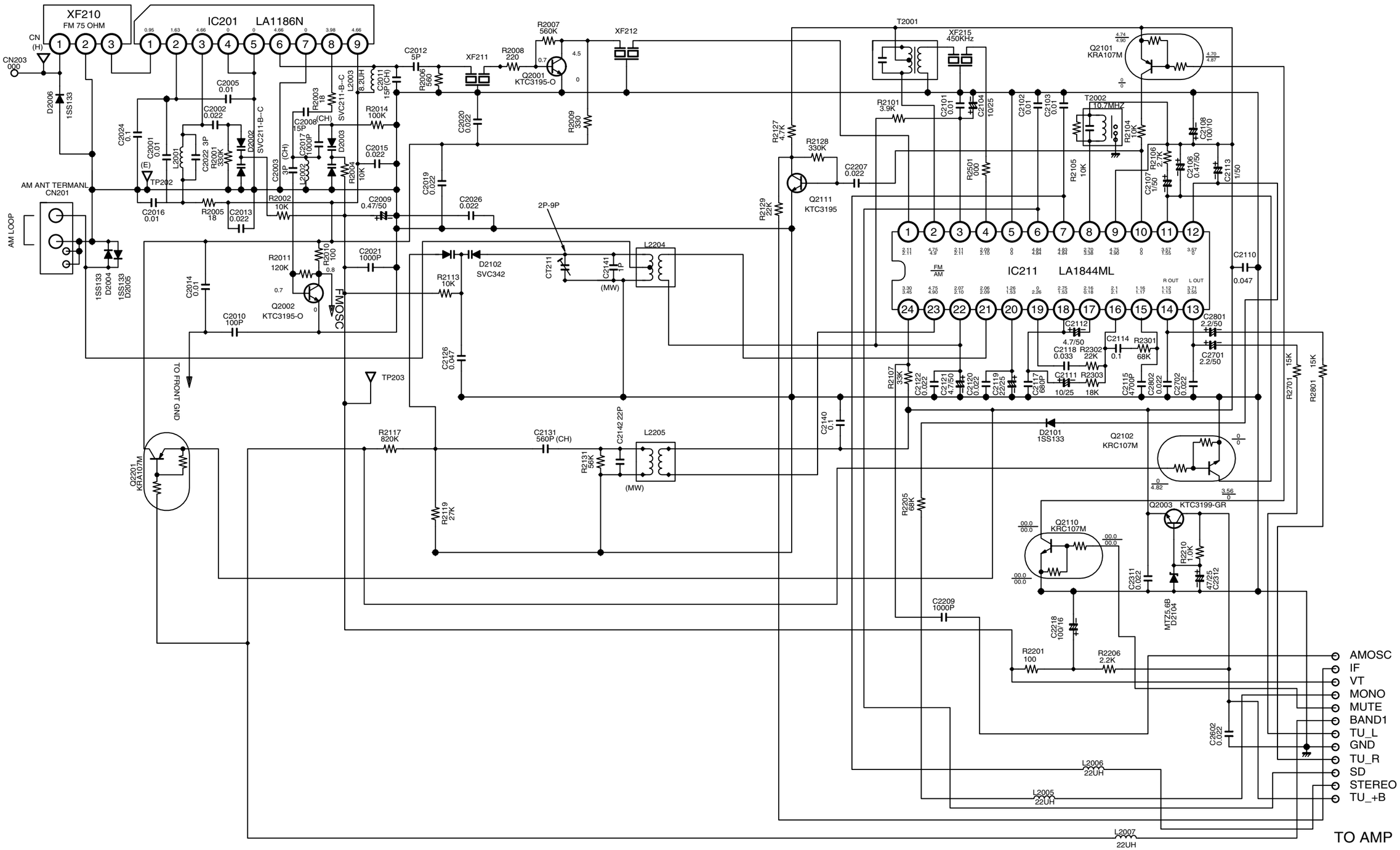
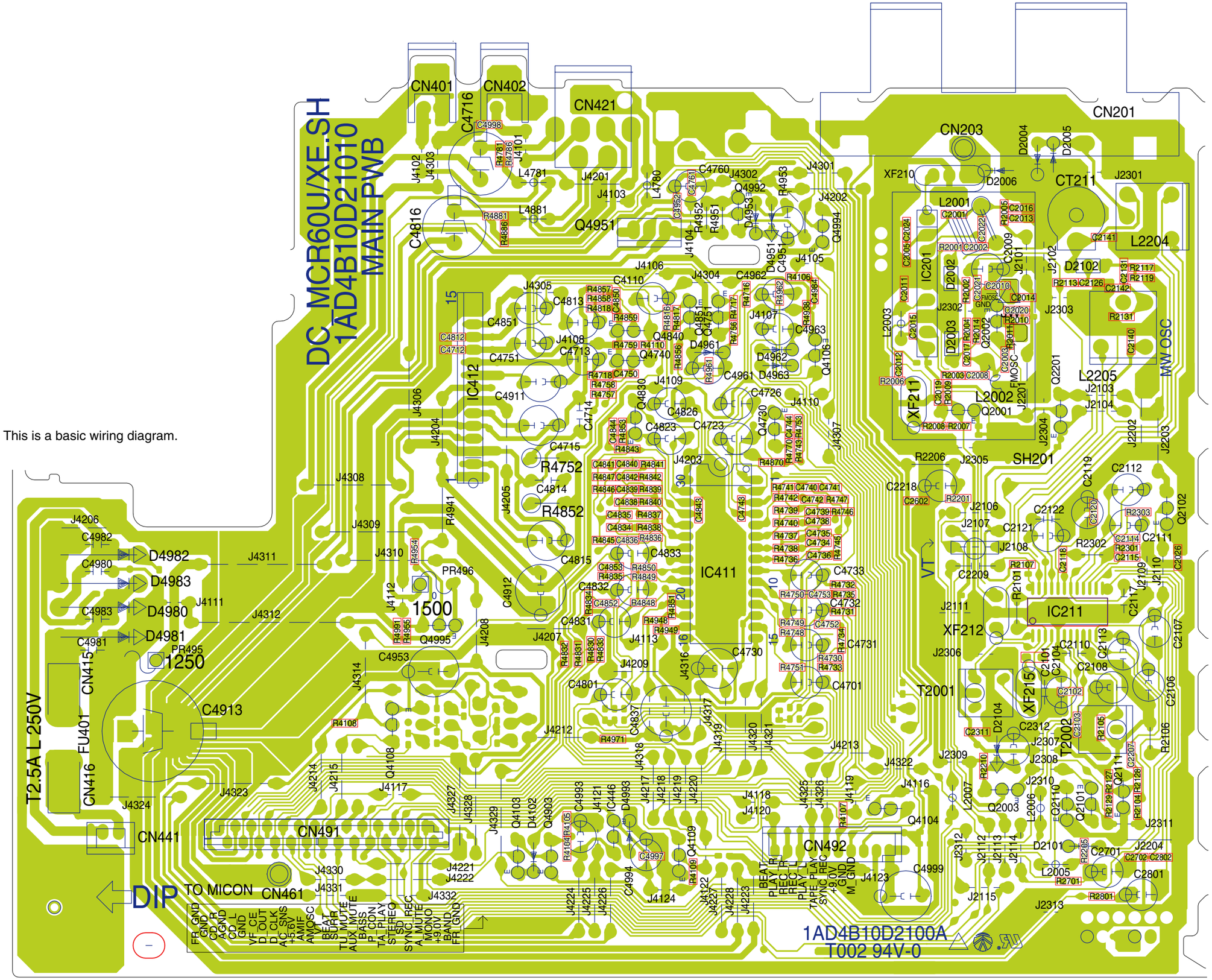
This is a basic schematic diagram.

SCHEMATIC DIAGRAM (TUNER)



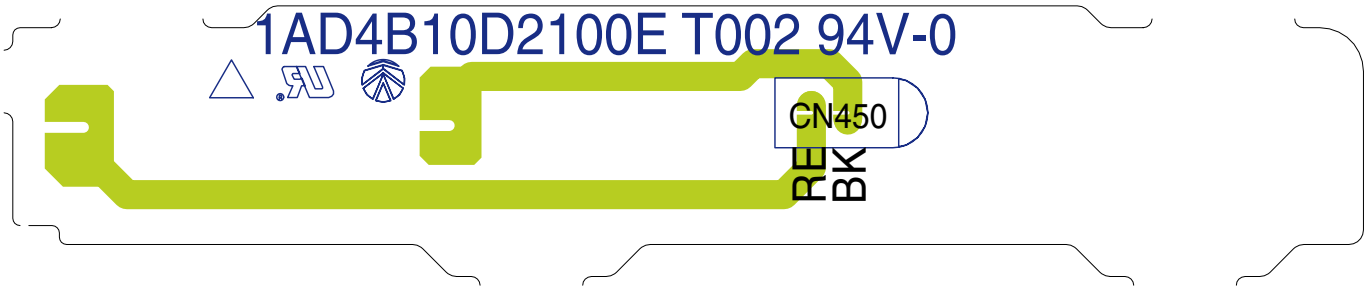
This is a basic schematic diagram.

This is a basic wiring diagram.

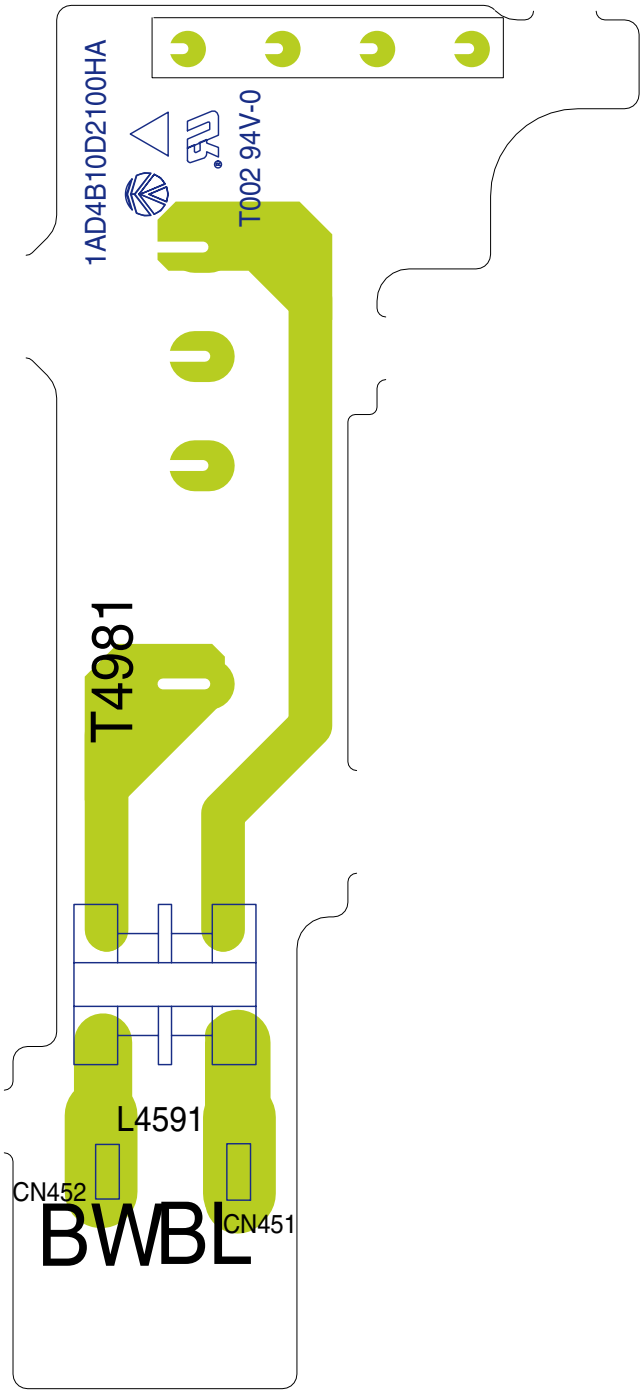


WIRING DIAGRAM

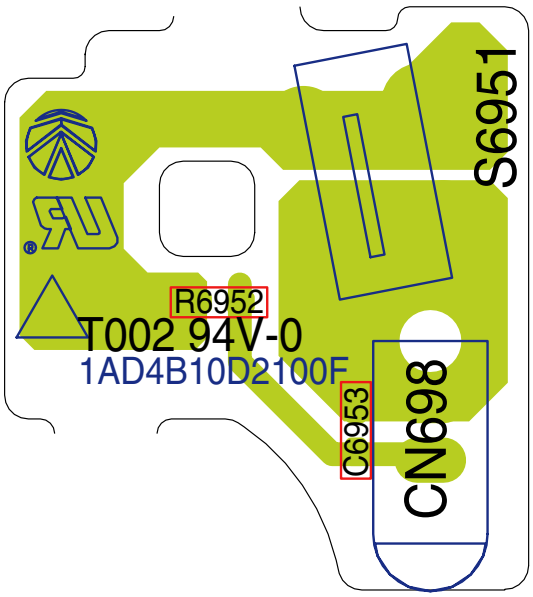
PRIMARY POWER SUPPLY P.W.BOARD ASSY



SECONDARY POWER SUPPLY P.W.BOARD ASSY



SWITCH P.W.BOARD ASSY



This is a basic wiring diagram.

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Osaka, Japan

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